In one aspect, the data may be parsed to match each of a plurality of electronics and appliances distributors and electronics and appliances suppliers. In another aspect, the data may be made accessible to the electronics and appliances outlets, the electronics and appliances distributor, the electronics and appliances supplier via a network-based interface. In an additional aspect, the data may be accessible to the electronics and appliances distributor and the electronics and appliances supplier only after verification of an identity thereof. In another aspect, the network may include the Internet. In a further aspect, the electronics and appliances outlets, the electronics and appliances distributor, and the electronics and appliances supplier each may forecast utilizing the data.

Figure **95** is a flowchart of a process **9530** for managing a transportation equipment supply chain utilizing a network. Transportation equipment can include such things as vehicles, automobiles, motor vehicles, aircraft, watercraft, and the accompanying parts and supplies for each of these, such as engine parts, maintenance supplies (filters, belts, hoses, etc.), washing supplies, etc. A network is utilized in operation **9532** to receive data from a plurality of transportation equipment outlets of a transportation equipment supply chain in which the data relates to the sale of transportation equipment by the transportation equipment outlets. An electronic order form is generated in operation **9534** based on the data for ordering transportation equipment from a transportation equipment distributor of the transportation equipment supply chain. The data is transmitted via the network to the transportation equipment distributor of the transportation equipment supply chain in operation **9536**. The data is also transmitted to a transportation equipment supplier of the transportation equipment supply chain utilizing the network in operation **9538**. Additionally, activity in the transportation equipment supply chain is forecast utilizing the data in operation **9540**.

In one aspect, the data may be parsed to match each of a plurality of transportation equipment distributors and transportation equipment suppliers. In another aspect, the data may be made accessible to the transportation equipment outlets, the transportation equipment distributor, the transportation equipment supplier via a network-based

interface. In an additional aspect, the data may be accessible to the transportation equipment distributor and the transportation equipment supplier only after verification of an identity thereof. In another aspect, the network may include the Internet. In a further aspect, the transportation equipment outlets, the transportation equipment distributor, and the transportation equipment supplier each may forecast utilizing the data.

Figure **96** is a flowchart of a process **9630** for managing a home products supply chain utilizing a network. Home products can include, for example, building materials, garden equipment and supplies, home furnishings and coverings, furniture, etc. A network is utilized in operation **9632** to receive data from a plurality of home products outlets of a home products supply chain in which the data relates to the sale of home products by the home products outlets. An electronic order form is generated in operation **9634** based on the data for ordering home products from a home products distributor of the home products supply chain. The data is transmitted via the network to the home products distributor of the home products supply chain in operation **9636**. The data is also transmitted to a home products supplier of the home products supply chain utilizing the network in operation **9638**. Additionally, activity in the home products supply chain is forecast utilizing the data in operation **9640**.

In one aspect, the data may be parsed to match each of a plurality of home products distributors and home products suppliers. As a further aspect, the data may be made accessible to the home products outlets, the home products distributor, the home products supplier via a network-based interface. As an additional aspect, the data may be accessible to the home products distributor and the home products supplier only after verification of an identity thereof. In another aspect, the network may include the Internet. In a further aspect, the home products outlets, the home products distributor, and the home products supplier each may forecast utilizing the data.

Figure **97** is a flowchart of a process **9730** for managing a food and beverage supply chain utilizing a network. A network is utilized in operation **9732** to receive data from a plurality of food and beverage outlets of a food and beverage supply chain in which the

data relates to the sale of food and beverage by the food and beverage outlets. An electronic order form is generated in operation **9734** based on the data for ordering food and beverage from a food and beverage distributor of the food and beverage supply chain. The data is transmitted via the network to the food and beverage distributor of the food and beverage supply chain in operation **9736**. The data is also transmitted to a food and beverage supplier of the food and beverage supply chain utilizing the network in operation **9738**. Additionally, activity in the food and beverage supply chain is forecast utilizing the data in operation **9740**.

In one aspect, the data may be parsed to match each of a plurality of food and beverage distributors and food and beverage suppliers. In another aspect, the data may be made accessible to the food and beverage outlets, the food and beverage distributor, the food and beverage supplier via a network-based interface. In an additional aspect, the data may be accessible to the food and beverage distributor and the food and beverage supplier only after verification of an identity thereof. In another aspect, the network may include the Internet. In a further aspect, the food and beverage outlets, the food and beverage distributor, and the food and beverage supplier each may forecast utilizing the data.

Figure **98** is a flowchart of a process **9830** for managing a machinery supply chain utilizing a network. A network is utilized in operation **9832** to receive data from a plurality of machinery outlets of a machinery supply chain in which the data relates to the sale of machinery by the machinery outlets. An electronic order form is generated in operation **9834** based on the data for ordering machinery from a machinery distributor of the machinery supply chain. The data is transmitted via the network to the machinery distributor of the machinery supply chain in operation **9836**. The data is also transmitted to a machinery supplier of the machinery supply chain utilizing the network in operation **9838**. Additionally, activity in the machinery supply chain is forecast utilizing the data in operation **9840**.

In one aspect, the data may be parsed to match each of a plurality of machinery distributors and machinery suppliers. In another aspect, the data may be made accessible to the machinery outlets, the machinery distributor, the machinery supplier via a network-based interface. In an additional aspect, the data may be accessible to the machinery distributor and the machinery supplier only after verification of an identity thereof. In another aspect, the network may include the Internet. In a further aspect, the machinery outlets, the machinery distributor, and the machinery supplier each may forecast utilizing the data.

Figure **99** is a flowchart of a process **9930** for managing a sporting goods supply chain utilizing a network. A network is utilized in operation **9932** to receive data from a plurality of sporting goods outlets of a sporting goods supply chain in which the data relates to the sale of sporting goods by the sporting goods outlets. An electronic order form is generated in operation **9934** based on the data for ordering sporting goods from a sporting goods distributor of the sporting goods supply chain. The data is transmitted via the network to the sporting goods distributor of the sporting goods supply chain in operation **9936**. The data is also transmitted to a sporting goods supplier of the sporting goods supply chain utilizing the network in operation **9938**. Additionally, activity in the sporting goods supply chain is forecast utilizing the data in operation **9940**.

In one aspect, the data may be parsed to match each of a plurality of sporting goods distributors and sporting goods suppliers. In another aspect, the data may be made accessible to the sporting goods outlets, the sporting goods distributor, the sporting goods supplier via a network-based interface. In an additional aspect, the data may be accessible to the sporting goods distributor and the sporting goods supplier only after verification of an identity thereof. In another aspect, the network may include the Internet. In a further aspect, the sporting goods outlets, the sporting goods distributor, and the sporting goods supplier each may forecast utilizing the data.

Figure **100** is a flowchart of a process **10030** for managing a chemical supply chain utilizing a network. A network is utilized in operation **10032** to receive data from a

plurality of chemical outlets of a chemical supply chain in which the data relates to the sale of chemical by the chemical outlets. An electronic order form is generated in operation **10034** based on the data for ordering chemical from a chemical distributor of the chemical supply chain. The data is transmitted via the network to the chemical distributor of the chemical supply chain in operation **10036**. The data is also transmitted to a chemical supplier of the chemical supply chain utilizing the network in operation **10038**. Additionally, activity in the chemical supply chain is forecast utilizing the data in operation **10040**.

In one aspect, the data may be parsed to match each of a plurality of chemical distributors and chemical suppliers. As a further aspect, the data may be made accessible to the chemical outlets, the chemical distributor, the chemical supplier via a network-based interface. As an additional aspect, the data may be accessible to the chemical distributor and the chemical supplier only after verification of an identity thereof. In another aspect, the network may include the Internet. In a further aspect, the chemical outlets, the chemical distributor, and the chemical supplier each may forecast utilizing the data.

Figure **101** is a flowchart of a process **10130** for managing a department store supply chain utilizing a network. A network is utilized in operation **10132** to receive data from a plurality of department store outlets of a department store supply chain in which the data relates to the sale of department store by the department store outlets. An electronic order form is generated in operation **10134** based on the data for ordering department store from a department store distributor of the department store supply chain. The data is transmitted via the network to the department store distributor of the department store supply chain in operation **10136**. The data is also transmitted to a department store supplier of the department store supply chain utilizing the network in operation **10138**. Additionally, activity in the department store supply chain is forecast utilizing the data in operation **10140**.

In one aspect, the data may be parsed to match each of a plurality of department store distributors and department store suppliers. As a further aspect, the data may be made

accessible to the department store outlets, the department store distributor, the department store supplier via a network-based interface. As an additional aspect, the data may be accessible to the department store distributor and the department store supplier only after verification of an identity thereof. In another aspect, the network may include the Internet. In a further aspect, the department store outlets, the department store distributor, and the department store supplier each may forecast utilizing the data.

Figure **102A** is a flowchart of a process **10230** for managing an office product supply chain utilizing a network. Note that office products can include, for example, furniture as well as items typically referred to as office supplies. A network is utilized in operation **10232** to receive data from a plurality of office product outlets of an office product supply chain in which the data relates to the sale of office product by the office product outlets. An electronic order form is generated in operation **10234** based on the data for ordering office product from an office product distributor of the office product supply chain. The data is transmitted via the network to the office product distributor of the office product supply chain in operation **10236**. The data is also transmitted to an office product supplier of the office product supply chain utilizing the network in operation **10238**. Additionally, activity in the office product supply chain is forecast utilizing the data in operation **10240**.

In one aspect, the data may be parsed to match each of a plurality of office product distributors and office product suppliers. As a further aspect, the data may be made accessible to the office product outlets, the office product distributor, the office product supplier via a network-based interface. As an additional aspect, the data may be accessible to the office product distributor and the office product supplier only after verification of an identity thereof. In another aspect, the network may include the Internet. In a further aspect, the office product outlets, the office product distributor, and the office product supplier each may forecast utilizing the data.

Figure **102B** is a flow diagram of a process **10260** for managing a book supply chain utilizing a network. In operation **10262**, a network is utilized to receive data from a

plurality of book outlets of a book supply chain in which the data relates to the sale of books by the book outlets. In operation **10264**, an electronic order form is generated based on the data for ordering book from a book distributor of the book supply chain. In operation **10266**, the data is transmitted via the network to the book distributor of the book supply chain. In operation **10268**, the data is also transmitted to a book supplier of the book supply chain utilizing the network. In operation **10270**, activity in the book supply chain is forecast utilizing the data.

In one aspect, the data may be parsed to match each of a plurality of book distributors and book suppliers. In another aspect, the data may be made accessible to the book outlets, the book distributor, the book supplier via a network-based interface. In an additional aspect, the data may be accessible to the book distributor and the book supplier only after verification of an identity thereof. In another aspect, the network may include the Internet. In a further aspect, the book outlets, the book distributor, and the book supplier each may forecast utilizing the data.

Figure **103** is a flowchart of a process **10330** for managing a gas station supply chain utilizing a network. In operation **10332**, a network is utilized to receive data from a plurality of gas station outlets of a gas station supply chain in which the data relates to the sale of gas station goods and services by the gas station outlets. In operation **10334**, an electronic order form is generated based on the data for ordering gas station goods and services from a gas station distributor of the gas station supply chain. The data is transmitted via the network to the gas station distributor of the gas station supply chain in operation **10336**. The data is also transmitted to a gas station supplier of the gas station supply chain in operation **10338** utilizing the network. Additionally, activity in the gas station supply chain is forecast in operation **10340** utilizing the data.

In one aspect, the data may be parsed to match each of a plurality of gas station distributors and gas station suppliers. In another aspect, the data may be made accessible to the gas station outlets, the gas station distributor, the gas station supplier via a network-based interface. In an additional aspect, the data may be accessible to the gas

station distributor and the gas station supplier only after verification of an identity thereof. In another aspect, the network may include the Internet. In a further aspect, the gas station outlets, the gas station distributor, and the gas station supplier each may forecast utilizing the data.

Figure **104A** is a flowchart of a process **10430** for managing a convenience store supply chain utilizing a network. A network is utilized in operation **10432** to receive data from a plurality of convenience store outlets of a convenience store supply chain in which the data relates to the sale of convenience store by the convenience store outlets. In operation **10434**, an electronic order form is generated based on the data for ordering convenience store from a convenience store distributor of the convenience store supply chain. The data is transmitted via the network to the convenience store distributor of the convenience store supply chain in operation **10436**. In operation **10438**, the data is transmitted to a convenience store supplier of the convenience store supply chain utilizing the network. In operation **10440**, activity in the convenience store supply chain is forecast utilizing the data.

In one aspect, the data may be parsed to match each of a plurality of convenience store distributors and convenience store suppliers. In another aspect, the data may be made accessible to the convenience store outlets, the convenience store distributor, the convenience store supplier via a network-based interface. In an additional aspect, the data may be accessible to the convenience store distributor and the convenience store supplier only after verification of an identity thereof. In another aspect, the network may include the Internet. In a further aspect, the convenience store outlets, the convenience store distributor, and the convenience store supplier each may forecast utilizing the data.

Figure **104B** is a flow diagram of a process **10460** for managing a toy supply chain utilizing a network. In operation **10462**, a network is utilized to receive data from a plurality of toy outlets of a toy supply chain in which the data relates to the sale of toys by the toy outlets. In operation **10464**, an electronic order form is generated based on the data for ordering toy from a toy distributor of the toy supply chain. In operation **10466**,

the data is transmitted via the network to the toy distributor of the toy supply chain. In operation **10468**, the data is also transmitted to a toy supplier of the toy supply chain utilizing the network. In operation **10470**, activity in the toy supply chain is forecast utilizing the data.

In one aspect, the data may be parsed to match each of a plurality of toy distributors and toy suppliers. In another aspect, the data may be made accessible to the toy outlets, the toy distributor, the toy supplier via a network-based interface. In an additional aspect, the data may be accessible to the toy distributor and the toy supplier only after verification of an identity thereof. In another aspect, the network may include the Internet. In a further aspect, the toy outlets, the toy distributor, and the toy supplier each may forecast utilizing the data.

Figure **105** is a flowchart of a process **10530** for managing an entertainment media supply chain utilizing a network. Such entertainment media may include mediums with music and/or video stored thereon, etc. In operation **10532**, a network is utilized to receive data from a plurality of entertainment media outlets of an entertainment media supply chain in which the data relates to the sale of entertainment media by the entertainment media outlets. In operation **10534**, an electronic order form is generated based on the data for ordering entertainment media from an entertainment media distributor of the entertainment media supply chain. In operation **10536**, the data is transmitted via the network to the entertainment media distributor of the entertainment media supply chain. In operation **10538**, the data is transmitted to an entertainment media supplier of the entertainment media supply chain utilizing the network. In operation **10540**, activity in the entertainment media supply chain is forecast utilizing the data.

In one aspect, the data may be parsed to match each of a plurality of entertainment media distributors and entertainment media suppliers. In another aspect, the data may be made accessible to the entertainment media outlets, the entertainment media distributor, the entertainment media supplier via a network-based interface. In an additional aspect, the data may be accessible to the entertainment media distributor and the entertainment

media supplier only after verification of an identity thereof. In another aspect, the network may include the Internet. In a further aspect, the entertainment media outlets, the entertainment media distributor, and the entertainment media supplier each may forecast utilizing the data.

Figure **106** is a flowchart of a process **10630** for managing an accommodation supply chain utilizing a network. A network is utilized in operation **10632** to receive data from a plurality of accommodation outlets of an accommodation supply chain in which the data relates to the sale of accommodation by the accommodation outlets, such as hotels, motels, inns, resorts, casinos, etc. An electronic order form is generated in operation **10634** based on the data for ordering accommodation from an accommodation distributor of the accommodation supply chain. The data is transmitted via the network to the accommodation distributor of the accommodation supply chain in operation **10636**. The data is also transmitted to an accommodation supplier of the accommodation supply chain utilizing the network in operation **10638**. Additionally, activity in the accommodation supply chain is forecast utilizing the data in operation **10640**.

In one aspect, the data may be parsed to match each of a plurality of accommodation distributors and accommodation suppliers. As a further aspect, the data may be made accessible to the accommodation outlets, the accommodation distributor, the accommodation supplier via a network-based interface. As an additional aspect, the data may be accessible to the accommodation distributor and the accommodation supplier only after verification of an identity thereof. In another aspect, the network may include the Internet. In a further aspect, the accommodation outlets, the accommodation distributor, and the accommodation supplier each may forecast utilizing the data.

Figure **107** is a flowchart of a process **10730** for a reverse auction in a supply chain management framework. Data is received in operation **10732** from a plurality of stores of a supply chain utilizing a network. The data relates to the sale of goods by the stores. An electronic order form is generated based on the data for ordering goods from a distributor of the supply chain in operation **10734**. The data is then transmitted to

suppliers of the supply chain utilizing the network in operation **10736** so that the suppliers can offer raw products used for producing the goods at a predetermined price, with the price decreasing as a function of time during a predetermined duration.

In one aspect, the data is parsed to match each of a plurality of distributors. In such an aspect, the data may be made accessible to the stores, the distributor, the suppliers via a network-based interface. As a further aspect, the data may be accessible to the distributor and the suppliers only after verification of an identity thereof. In another aspect, the suppliers are chosen by the stores. In a further aspect, the stores, the distributor, and the suppliers each forecast utilizing the data.

Figure **108** is a flowchart of a process **10830** for tracking non-conforming goods in a supply chain management framework. Note that as used herein, "non-conforming goods includes damaged goods, mislabeled goods, and inappropriate goods, etc. Thus, it should be understood that this process **10830** may also be utilized for tracking product withdrawals and recalls, as well as tracking wrong products at the wrong time for the wrong purpose so that incorrectly shipped products can be promptly identified so that damaged product, wrong product, incorrect amounts of product are identified and tracked. A network is utilized in operation **10832** to receive data from a plurality of stores of a supply chain. This data relates to the sale of goods by the stores. An electronic order form is generated based on the data for ordering goods from a distributor of the supply chain in operation **10834**. When the ordered goods are received in operation **10836**, information relating to any non-conforming goods delivered by the distributor is entered in operation **10838** and aggregated in a database in operation **10840**. The aggregated information is subsequently transmitted to the distributor utilizing the network in operation **10842**.

In one aspect, the information relates to an amount of damage to the goods. In such an aspect, the information may also relate to a type of damage to the goods. In another aspect, a plurality of electronic order forms are generated based on the data for ordering goods from a plurality of distributors of the supply chain. As an aspect in this aspect, the

information may be parsed based on the distributor. As a further aspect, a comparison may be performed between the parsed data for each of the distributors. In another aspect, invoices may be automatically adjusted to account for the damaged/nonconforming goods. In yet another aspect, the goods may be salvaged, such as by being donated to charity, shipped back to the distributor, resold, etc.

Figure **109** is a flowchart of a process **10900** for allocating responsibilities in a supply chain management framework. An agreement between a plurality of parties in a supply chain is received in operation **10902**. A plurality of terms of the agreement are identified in operation **10904** which are then parsed in operation **10906** into at least a pair of groups including a first group of terms that includes commercial terms and a second group of terms that includes brand identity terms. Also, each of the terms outlines a responsibility. These responsibilities are allocated among the parties based on the parsing in operation **10908**.

In one aspect, a first party is allocated the responsibilities outlined by the first group of terms and a second party is allocated the responsibilities outlined by the second group of terms. In another aspect, the parties are allocated the responsibilities outlined by one of the groups of terms. In a further aspect, the agreement is received utilizing network. In such an aspect, the terms may be parsed automatically utilizing a template. As a further aspect, the responsibilities may be allocated by transmitting electronic mail utilizing the network. In an additional aspect, the agreement includes an operating agreement.

Figure **110** is a flowchart of a process **11000** for determining product supply parameters in a supply chain management framework. Product supply parameters may include information including the following: price/volume/weight/fob/minimum quantity/payment terms/product specifications. Data is received from a plurality of supply chain participants of a supply chain utilizing a network in operation **11002**. The received data relates to the sale of products by the supply chain participants. Product supply parameters corresponding to each supply chain participant are then determined based on information including the data in operation **11004**. Next, corresponding product

supply parameters is communicated to at least one supply chain participant in operation **11006**.

In one aspect, the product supply parameters are determined by a brand owner. In another aspect, the data is transmitted to the distributor and a supplier in accordance with the product supply parameters. In a further aspect, the network includes the Internet. In an additional aspect, forecasting is carried out as a function of the data and the product supply parameters. In another aspect, the product supply parameters indicate a price and an amount of the products to be ordered. In such an aspect, the product supply parameters may also indicate the price and the amount of the products to be ordered utilizing a look-up table which correlates the data to an appropriate price and amount.

Figure **111** is a flowchart of a process **6200** for reducing costs in a supply chain management framework. Data is received from a plurality of supply chain participants utilizing a network in operation **11102**. The received data relates to the sale of products by the supply chain participants. Rules are determined to ensure the incurrence of minimal costs to the supply chain participants in operation **11104** and the rules are applied to ensure supply to the supply chain participants at minimal cost without requiring the supply chain manager to take title to any goods in operation **11106**.

In one aspect, the rules are determined by a brand owner. In another aspect, the rules indicate a distributor to which the electronic order form is to be sent. In a further aspect, the rules indicate an amount of the products to be ordered from the distributor of the supply chain. In an additional aspect, forecasting is carried out as a function of the rules. In another aspect, promotion planning is carried out as a function of the rules.

Figure **112** is a flowchart of a process **11200** for handling contracts in a supply chain management framework. One of a plurality of contracts is selected in operation **11202**. The selected contract template is transmitted to a supply chain participant in operation **11204**. Data is received from supply chain participants utilizing a network in operation

11206. This data relates to the sale of products by the supply chain participants. The contract templates are then enforced in accordance with the data in operation **11208**.

In one aspect, the contract templates compliment each other. In another aspect, each contract template includes portions to be filled out by the supply chain participants. In a further aspect, the selected contract template is transmitted to the supply chain participant utilizing the network. In an additional aspect, the network includes the Internet. In another aspect, an indication of acceptance of the contract is received from the supply chain participant.

Figure **113** is a flowchart of a process **11300** for centralizing a supply chain management framework in which a plurality of distributors of a supply chain are registered in operation **11302**. Distribution management rights are then assigned from the distributors to a supply chain manager in operation **11304**. Subsequently, data from a plurality of outlets of the supply chain is received utilizing a network in operation **11306**. The received data relates to the sale of products by the outlets. The use of the data is managed during the distribution of products to the outlets by the distributors in operation **11308**. This management of data use is handled by the supply chain manager.

In one aspect, the assignment is capable of being terminated based on gross negligence on the part of the supply chain manager. In another aspect, the distributors are registered utilizing the network. In a further aspect, the managing includes determining an amount of the products to be distributed to the outlets. In an additional aspect, the managing includes determining a timing of distribution of the products to be distributed to the outlets. In yet another aspect, the managing includes the selection of the distributors to distribute products to the outlets.

Figure **114** is a flowchart of a process **11400** for providing local distribution committees in a supply chain management framework. A plurality of distributors of a supply chain are registered in operation **11402**. Through a supply chain manager, a local distribution committee is organized and assigned for each distributor in operation **11406**. Data from a

plurality of outlets of the supply chain is subsequently received utilizing a network in operation **11408**. This received data relates to the sale of products by the outlets. The data is then transmitted to each of the distributors via the corresponding local distribution committee utilizing the network in operation **11410**.

In one aspect, the data is organized by the corresponding local distribution committee prior to transmission to the distributors. In another aspect, the data is processed by the corresponding local distribution committee prior to transmission to the distributors. In a further aspect, each local distribution committee utilizes the data for forecasting and then transmits the forecasting to the corresponding distributors. In an additional aspect, the distributors are organized and assigned a local distribution committee based on a location thereof. In even another aspect, each local distribution committee includes a network-based interface for transmitting the data.

Figure **115** is a flowchart of a process **11500** for price auditing in a supply chain management framework. A network is utilized in operation **11502** to collect data from a plurality of stores of a supply chain that relates to the sale of goods by the stores. Electronic order forms are generated in operation **11504** based on the data for ordering goods from a plurality of distributors of the supply chain and then sent to the distributors in operation **11506** utilizing the network. In response, invoices are received from the distributors utilizing the network in operation **11508**. A price for the goods is then calculated utilizing the electronic order forms and the invoices in operation **11510**. Subsequently, the price is audited in operation **11512**.

In one aspect, the price is audited by comparing the price to a predetermined amount. In another aspect, the price of the goods is calculated from the electronic order forms utilizing a table mapping a plurality of goods with a plurality of prices. In a further aspect, the electronic order forms are generated by the stores. In an additional aspect, the electronic order forms are generated by the stores. In yet another aspect, an electronic mail alert is generated in response to the audit.

Figure **116** is a flowchart of a process **11600** for auditing performance in a supply chain framework. Data is collected from a plurality of supply chain participants utilizing a network in operation **11602**. This data relates to the sale of goods by the supply chain participants. Access to the data is allowed utilizing a network-based interface in operation **11604**. Electronic order forms are generated based on the data for a supply chain participant in operation **11606**. The generated electronic order forms are sent to the to the supply chain participant utilizing the network in operation **11608**. A performance of the delivery of the goods by the supply chain participant is then tracked in operation **11610**. The tracked performance of the delivery of the goods by the supply chain participant is subsequently audited in operation **11612**.

In one aspect, the performance may be audited by comparing the performance to a performance indicated on the electronic order forms. In another aspect, the performance may indicate a day of the delivery. In a further aspect, the performance may indicate an hour of the delivery. In an additional aspect, the performance may be tracked by entering the performance utilizing the network-based interface. In another aspect, an electronic mail alert may be generated in response to the audit.

Figure **117** is a flowchart of a process **11700** for providing an electronic mail virtual private network in a supply chain management framework. Utilizing a network, data is collected in operation **11702** from a plurality of outlets of a supply chain that relates to the sale of goods by the outlets. Access to the data is allowed in operation **11704** utilizing a network-based interface. The data is processed in operation **11706** and then sent in operation **11708** using electronic mail via the network to one or more of the following: a supplier, a distributor and the outlets in the supply chain.

In one aspect, the network includes the Internet. In another aspect, the processed data is sent to the supplier, the distributor, and the outlets. In such an aspect, the supplier, the distributor, and the outlets may be registered with a process that includes the collection of electronic mail addresses thereof. In further aspect, the processed data includes

forecasting, promotion planning, and ordering. In an additional aspect, the processed data may be sent to a supplier, a distributor, as well as outlets indicated by the data.

Figure **118** is a flowchart of a process **11800** for secret pricing in a supply chain management framework. An agreement is negotiated with a supplier of a supply chain that sets a first price for a predetermined product in operation **11802**. The predetermined product is then ordered from the supplier by a purchasing supply chain participant in operation **11804**. Data is collected from a plurality of supply chain participants utilizing a network in operation **11806**. The data relates to the sale of goods by the supply chain participants. An invoice is subsequently received from the supplier by the purchasing supply chain participant in operation **11808**. This the invoice reflects a second price for the predetermined product which is different from the first price.

In one aspect, the ordering is carried out utilizing a network. In a similar aspect, the receiving is carried out utilizing a network. In another aspect, the second price is a function of the first price. For example, the first price may be a percentage of the second price. In further aspect, the second price is converted to the first price prior to processing. In such an aspect, the processing may include market analysis. In yet another aspect, a supply chain manager may collect from the supplier an amount equal to a difference between the second price and the first price.

Figure **119** is a flowchart of a process **11900** for managing risk in a supply chain management framework. A network is utilized in operation **11902** to receive data from a plurality of outlets of a supply chain that relates to an amount of products sold by the outlets. A maximum acceptable amount of loss is determined in operation **11904** and the maximum acceptable amount of loss is translated to acceptable ordering standards in operation **11906**. An electronic order form is then generated based on the data and the acceptable ordering standards for ordering products from a distributor of the supply chain in operation **11908**.

In one aspect, the maximum acceptable amount of loss includes a predetermined amount of money. In another aspect, the acceptable ordering standards allow the calculation of a maximum amount of products that can be ordered as a function of the data. In a further aspect, the acceptable ordering standards allow the calculation of a maximum price of products that can be ordered as a function of the data. In an additional aspect, the translating is carried out utilizing a look-up table. In yet another aspect, an alert is generated upon the products ordered based on the data not meeting the acceptable ordering standards.

Figure **120** is a flowchart of a process **12000** for product tracking in a supply chain management framework. Data is received from a plurality of outlets of a supply chain utilizing a network in operation **12002**. The received data relates to an amount of products sold by the outlets. Electronic order forms are generated based on the data for ordering products from a distributor of the supply chain in operation **12004**. The electronic order forms indicate an amount of the products ordered by each outlet. An amount and a location of the products are tracked utilizing the data and the forms in operation **12006**.

In one aspect, the products may be tracked for recall purposes. In another aspect, the amount and the location of the products may be tracked by subtracting the amount of products sold from the amount of products ordered for each of the outlets. In a further aspect, the amount and the location of the products may be audited. In an additional aspect, the amount of products sold and the amount of products ordered may be accessible via a network-based interface. In yet another aspect, the network includes the Internet.

Figure **121** is a flowchart of a process **12100** for auctioning surplus products in a supply chain management framework. Utilizing a network, data is received from a plurality of outlets of a supply chain in operation **12102**. The received data relates to an amount of products sold by the outlets. The received data is then made accessible to the outlets, distributors, and suppliers utilizing a network based interface in operation **12104**.

Utilizing the network-based interface, surplus products from at least one of the outlets are auctioned in operation **12106**.

In one aspect, the outlets, the distributors, and the suppliers may be provided access to the network-based interface. In such an aspect, the outlets, the distributors, and the suppliers may also be capable of submitting bids utilizing the network-based interface. In another aspect, the network includes the Internet. In a further aspect, the auctioning may be initiated in response to one of the outlets closing.

Figure **122** is a flowchart of a process **12200** for managing a supply chain utilizing a network. Data is received from a plurality of outlets of a supply chain utilizing a network in operation **12202**. The received data relates to the sale of products by the outlets. An electronic order form is then generated in operation **12204** based on the data for ordering products from a distributor of the supply chain. Access to the data is provided in operation **12206** utilizing a network-based interface equipped to handle secure sockets layer (SSL) protocol.

In one aspect, the access may be provided only after verification of a password and a user name. In another aspect, the network-based interface may be capable of timing out after a predetermined amount of time. In a further aspect, the data and electronic order form may be encrypted. In yet another aspect, the network includes the Internet. In an additional aspect, the outlets, the distributor, and a supplier each may be provided access to the network-based interface.

Figure **123** is a flowchart of a process **12300** for managing a supply chain utilizing a network. Data from a plurality of outlets of a supply chain is received utilizing a network in operation **12302**. The received data relates to the sale of products by the outlets. An electronic order form is generated in operation **12304** based on the data for ordering products from a distributor of the supply chain. Access to the data is allowed utilizing a network-based interface in operation **12306**.

In one aspect, forecasting may be made available on the network-based interface. In another aspect, promotion planning may be made available on the network-based interface. In a further aspect, the network includes the Internet. In an additional aspect, the outlets, the distributor, and a supplier may be allowed access to the data.

Figure **124** is a flowchart of a process **12400** for disseminating calendar information in a supply chain utilizing a network. A network is utilized in operation **12402** to receive data from a plurality of outlets of a supply chain relating to the sale of products by the outlets. A calendar of events is generated in operation **12404**. Access to the calendar of events is allowed utilizing a network-based interface in operation **12406**.

In one aspect, the calendar of events may be generated based at least in part on the data. In another aspect, the calendar of events may be generated based at least in part on promotion planning. In further aspect, the network includes the Internet. In an additional aspect, the access to the calendar of events may be restricted to only a predetermined set of the outlets. In such an aspect, the restricted access may be enforced utilizing passwords as a further option.

Illustrative Embodiment

This section illustrates a Supply System according to an exemplary embodiment of the present invention. Accordingly, Figure **125** illustrates a graphical user interface **12500** for generating cost system components. The basic components of the cost system are Items **12502**, FOB points (Supplier Sites) and Distribution Centers. To add to or modify a cost system component, the relevant component is selected from the Supply menu. Then New **12602** is selected from selection screen **12600**. See Figure **126**.

Figure **127** illustrates an Add Items window **12700** displayed upon selecting Items from the Supply menu and New from the selection screen. Several fields of the window are:

- **Item Desc 12702:** Enter a uniquely identifying Item description. This is the name that will appear on all reports including Landed Cost reports, Price Notifications and Contract Exhibits. (The sections entitled Building Cost Matrices and Creating Contracts, below, provide an explanation of these reports.) Figure **128** illustrates a Landed Cost Report **12800** by Distribution Center.

- **Product Cat Code:** Product category, for example, dry, refrigerated, frozen etc.

- **Item Rank:** Optional, Test, Mandatory or Unknown.

Note that the underlined data indicates that the information is required.

Figure **129** illustrates an Item/FOB button **12900** that calls up an FOB window **13000** (see Figure **130**) upon its selection. If FOB points are already in the system, Item / FOB associations (Who can supply the product) can be created from this screen. A procedure for adding new FOB points is set forth below.

The information entered for each Item FOB has many implications throughout the purchasing automation systems. The values are used on many of the reports provided to Suppliers, Distributors and Board Members as well as being an integral part in Bid and Least Cost calculations. The following list defines several of the fields of the FOB window. Self-explanatory columns are omitted.

- **Supplier Item Desc:** Item description by which the Supplier identifies the Item. This may not always agree with the Supply Chain coordinator's description and in some cases the Supplier may have the same item description for many Supply Chain coordinator items, for example, promotional cups. **PN** (**PN** – Data is used on a Price Notification)
- **Item Size:** Used to store case dimensions; can be replaced by case specific columns. **PN**
- **Item No:** Suppliers Item number. **PN**

- **Case Length, Width, Depth:** Product of the columns should equal the Item Cube.
- **Tie / High Quantity:** Case Width and Height on a pallet, i.e. 3 Cases across on 4 levels. **PN**
- **Item Cube:** Volume per case. **PN / BLC (BLC** – Data is mandatory to complete the Bid / Least Cost calculations.)
- **Cases per Truckload:** # cases per truck. **PN / BLC**
- **Gross Weight:** Gross Weight of each case. **PN / BLC**

The process for adding FOB points is essentially the same as adding Items. In this case, Supplier Sites is selected from the Supply System main menu, then New on the selection screen. Figure **131** illustrates a window **13100** for adding an FOB point. In the Site Name field **13102**, the name of the site is entered. One standard naming convention for a supplier site is SUPPLIER NAME – CITY, STATE. The Site Role field identifies the role of the site. Only sites that have been marked with a role of "FOB Shipping Point" or "Corporate & FOB Point" are available to the purchasing systems when building cost matrices, creating Bids, etc.

The Supplier should be added to the system before identifying the FOB points. In many cases the Suppliers headquarters is also an FOB point. These records will be identified with a site role of "Corporate & FOB Point". See below for a further explanation of Site roles.

Figure **132** depicts a screen **13200** for adding Distribution Centers. Distribution Centers are added much less frequently and basically have to satisfy the same requirements as FOB points. They must have a role of "FOB Shipping Point" or "Corporate & FOB Point" and have an "Active" status in order to be selected.

Figure **133** is a flowchart of a process **13300** for creating cost system components in a supply chain utilizing a network in accordance with an embodiment of the present invention. A plurality of items are defined utilizing a graphical user interface in

operation **13302**. A supplier site is selected from a set utilizing the graphical user interface in operation **13304**. The set of supplier sites is determined based on the definition of the items. A distribution center is also determined utilizing the graphical user interface in operation **13306**. The distribution center is designated to interface with the supplier site for distribution of the items.

In one aspect of the present invention, the items may be defined utilizing an item identifier, a category, and a rank. In another aspect, the set of supplier sites may be determined utilizing on an association between the definition of the items and the supplier sites. In an additional aspect, the set of supplier sites may be capable of supplying the defined items. In a further aspect, the supplier sites may be defined utilizing a name and a role identifier. In an additional aspect, the items are defined, the supplier site selected, and the distribution center determined utilizing a network.

Building Cost Matrices

Once the basic components of the cost system have been created, the matrices can either be manually created or can be generated by the Least Cost system after completion of analysis. (See the section entitled Creating the Cost Matrices, below, for a detailed explanation of this option.)

Figure **134** illustrates a matrix window **13400**. Matrices can be created from scratch or by making a copy of a previous matrix using a New Using Previous option. The important options at the top of the matrix window are as follows:

- **Begin: / End:** Identifies the starting point and length of the current model. Matrices cannot overlap and at the point one attempts to save an overlapping matrix, he or she will be prompted to change the dates.
- **Final:** Only matrices that have been finalized will appear on all published reports in the system. Note that even if the dates suggest that this matrix is current, the fact that the final indicator is left unchecked will filter it from reports.

- **Apply By:** This feature allows a user to effect a change to one or multiple records. For example, say an Items Invoice FOB price will be the same regardless of the FOB point. If the price for one FOB point is entered, and "Apply By" Supplier is selected, the system would automatically copy the same value to all other FOB points belonging to that Supplier.

Figure **135** illustrates a matrix **13500**. Matrices are preferably used to display performance metrics in an organized and easily understandable manner. Such performance metrics include on time delivery, fill rate, perfect delivery, lead-time, payment periods, costs, order charges, etc.

The primary purpose of a matrix is to identify the source and destination for the product in question. In this example, the Ameriserve Denver Distribution Center (DC) will be supplied by Tyson's Greenforest, Arkansas FOB point.

Figure **136** illustrates an FOB matrix **13600**. Columns in the matrix are set forth below.

- **Con FOB** the Contract FOB is the actual price from the FOB point selected on the current record. In the case of volume pricing, this signifies the price at the volume breakpoint, based on the total award to this FOB point across all DC's.
- **Inv FOB** the Invoice FOB is the weighted average contract FOB for the current matrix. Each contract fob price is weighted based on the volume on that particular lane. This is the price that the DC will actually receive on their invoice. All DC's receive the same invoice price with the exceptions of RDC lanes (See below for a more detailed explanation.)
- **Freight** Actual freight charge on the lane.
- **Landed** the actual cost to the Distribution Center.

Figure **137** illustrates a contract matrix **13700** displayed upon selection of the Contract button **13800** shown in Figure **138**.

- **Contr** The contract that covers this item and date range. (See the section entitled Creating Contracts for a detailed explanation.) The contract is associated with the Matrix by selecting the Contract Link option on the toolbar.
- **LB** The total weight of product (generally only for beef) on this lane.
- **Trk** The number of trucks that the weight entered represents.
- **Routing** The routing option used on this lane. Either Full Truckload (TL), Less than Truckload (LTL), Re-distribution (RDC) or Truckload with a minimum (TLMIN). The section entitled **Optimal Product Routing** provides a detailed description with examples of each routing type.

Figure **139** depicts a minimum order matrix **13900**. Matrix items include:

- **Min Ordr / UM** When the usage on a lane suggests that the DC will not order full truckloads, the minimum order for TLMIN orders can be specified using these columns.
- **Slip** Whether the product ships on Slipsheets or Pallets.
- **Deliv.** In certain cases the Suppliers will quote only a price directly to the Distribution Center. In these scenarios the Invoice FOB, Contract FOB, Freight and Landed columns will be blank and the delivered price is entered here.

Figure **140** illustrates a shipping matrix **14000**.

- **Carrier** Rail, Truck, Ship etc. The method of shipment.
- **Stated Vol** the expected volume on the lane. This number will show up on the contract reports discussed in the next section.

Once the matrix is complete, it should be finalized and saved.

At this point the Distribution Center (DC) Price notification can be generated. This communicates to the DC's their FOB points selected and relevant pricing, and is generated by selecting the Price Notification option from the Options menu **14100**

(Figure **141**) or the Notification toolbar button **14200** (Figure **142**). Supplier confirmation is provided with the contract for all items except Beef.

For example, since beef pricing is changed much more frequently than other products, their contracts cover multiple cost matrices. They have a separate DC Notification and Supplier Confirmation report, which is only enabled when working with beef items.

The beef reports are generated in letter format and automatically combine all beef items into the same report.

Figure **143** illustrates selection of a Multi-Item Price Notification **14300**. If a Price Notification is generated from the cost matrix window, it will only include the current item. Also provided can be the facility to generate multi-item price notifications. The windows standard paradigm of CTRL+CLICK and SHIFT+CLICK can be used to select multiple items on the item selection window. The report will automatically combine all selected items in one report, but may or may not be possible to select two matrices for the same item.

Figure **144** is a flowchart of a process **14400** for utilizing cost models in a supply chain utilizing a network in accordance with an embodiment of the present invention. At least one item to be distributed is identified utilizing a graphical user interface in operation **14402**. A cost model is associated with the item utilizing the graphical user interface in operation **14404**. The graphical user interface is then utilized to determine a time frame during which the cost model is valid in operation **14406**. The cost model identifies a contract cost, an invoice cost, and a landed cost associated with the distribution of the item.

In one embodiment of the present invention, reports for each of the items may be generated utilizing the cost model. As a further aspect, at least one of the reports may be for a plurality of the items. In one aspect, the cost model identifies a source and a destination of the item. In another aspect, a plurality of the cost models may be available

for being associated with the item. In a further aspect, the item may be identified and the cost model associated with the item utilizing a network.

Creating Contracts

The Price Notification reports, discussed in the previous section provide the communication link with the DC's, whereas the Supplier reports are generated within the contracts system.

In order to link contracts to cost matrices as discussed in the previous section, the relevant items must first be associated with the contract. An item selection screen is accessed such as by selecting a New Item button **14500** as shown in Figure **145**. The item selection screen works in the same manner as the selection screens discussed in the section on "Creating Cost Components".

Preferably, Item / Contract associations cannot overlap; in other words there cannot be two contracts for the same items with a Supplier at the same time. The system will automatically prevent creation of this situation.

Figure **146** illustrates a Contract/Buyer association screen **14600**.

- **Contract ID:** The contract number is assigned automatically by the system once the user saves for the first time.
- **Current Buyer:** Products frequently change hands as buyer responsibility's change. The present invention provides the ability to select the current buyer to accommodate this fact.

Figure **147** depicts a contract schedule screen **14700**. Pertinent fields are:

- **Contract Start / End:** Contracts can span multiple matrices, but cannot overlap. The dates will appear on all reports sent to the Supplier.

- **Effective:** Either shipment or order date.
- **Payment Terms:** Terms of payment.

Lead-time, Effective and Payment Terms all appear on the DC Price notification.

The present invention also generates several reports. A Generate button **14800**, shown in Figure **148**, links to Microsoft Word and populates required fields with the contract information. Once created, a contract cannot be overwritten by the system. Further, contracts can only be removed by an administrative department.

Figure **149** illustrates an Exhibit A button **14900**, which upon selection provides the Supplier with the "Approved Products" listing for the current contract. This identifies the products and FOB points for which the contract is being established.

The Exhibit A report shows all detail added when the Item / FOB records is created. It is important in that it identifies the relationship between the Supply Chain Coordinator's item and the Supplier's item and also ensures that the information in the system is current and correct.

Figure **150** illustrates an Exhibit B button **15000**, which upon selection provides the detail on per case pricing and volume for each lane assigned to this Supplier.

The Exhibit B always retrieves the latest finalized matrix for each item. If the contract has not been linked or the relevant matrix finalized, they should be done prior to generating this report.

In most cases, the contract term will correspond to the start and end dates of the linked matrix. However, if the contract will outlast the matrix, the screen **15100** of Figure **151** is presented. The various columns include:

- Cost Matrix End Date identifies the minimum term but will also mean that at the end of the matrix the contracted pricing will expire and a new Exhibit B should be generated and signed. (See Replacement Exhibit B)
- Contract End Date assumes that the pricing will not change for the length of the contract although the matrix suggests that this may not be true.
- No End date essentially leaves it open-ended.

Since the Exhibit B will publish the term of the pricing, the choice of end date becomes very important.

In some cases, there may be a need to publish new pricing and volumes during the term of the contract. Selection of the Replacement Exhibit B menu item **15200** accommodates this process. See Figure **152**. The replacement Exhibit B differs from the standard Exhibit B only in that it provides a section at the end of the report for signatures.

Exhibit C, generated upon selecting the Exhibit C button **15300** of Figure **153**, lists product routing for each lane and any minimum order quantities if applicable, whether the product is sent in full truckloads, full truckloads with a minimum order quantity, less than truckload or for re-distribution.

Figure **154** is a flowchart of a process **15400** for creating a contract utilizing a supply chain graphical user interface in accordance with an embodiment of the present invention. A contract is identified utilizing a graphical user interface in operation **15402**. The contract is the associated with an item to be distributed utilizing the graphical user interface in operation **15404**. The item is also prevented from being associated with more than one contract in operation **15406**.

In one aspect of the present invention, the contract may be identified utilizing a start date, an end date, an execution date, and payment terms. In one embodiment, the contract may be generated by populating a template with information associated with the contract. In another aspect, items capable of being associated with the contract are displayed. In a

further aspect, the contract may be identified and the contract associated with the item utilizing a network. In such an aspect, the network may include the Internet.

Bid Proposal Processing

The proposal system has been designed to allow quick and easy creation of a generic proposal for any item(s) and supplier(s) within the Supply System. By centralizing the creation and storage of the data, an online record of all current and historical proposals is enabled. The proposal system is also tightly integrated with the Least Cost analysis system.

The system is made up of two modules: data entry and reporting.

Data Entry allows a user to enter or select all information for generating a complete proposal. Data Entry includes entering general proposal information (i.e. proposal name, buyer name, due date, contract begin date and end date), items, suppliers, restaurants served, usage information, selecting cost component templates, and updating Microsoft Word template documents. Most of the information above will be generated from data within the Supply System, but the system will allow the user to change some information when necessary.

Reporting: After data has been entered, the proposal can be generated and printed. In the reporting module of the proposal process, a user can update specific documents for a supplier, print any of the reports included in the proposal, and/or generate the entire proposal.

By following the flow of the tabs on the proposal window **d2900** (see Figure **d29**), the user will be guided through the proposal process. When enough data is entered to continue on to the next step in the proposal process more tabs will be enabled. For example, when the user has completed entering information on the Main Info tab, the Items, Suppliers, DCs, and FOB Price tabs will become enabled.

The goal of the proposal system is to provide a way to generate a proposal in a more time efficient manner while at the same time centralizing the storage of proposals and allowing integration of the proposal with the Least Cost Analysis system.

A new Proposal can be created in either of two ways. The first and probably the most simple method is to build the proposal from scratch. Referring to Figure **155**, to create a proposal from scratch, select Proposal from the Supply menu. Then select Edit/New **15500** to open an existing Proposal or create a new proposal. After selecting the Edit/New menu option, the standard query screen is presented. Select New on the standard query screen to begin generating the proposal.

The second method uses the "New Using Previous" feature of the present invention, which will create an entire copy of a previous proposal (not including any documents) and allow the user to make any necessary modifications. To being the process, select the New Using Previous menu item **15502** to copy an existing Proposal into a new Proposal. Note that this feature is similar to the Cost Matrix feature of the same name.

Figure **156** illustrates a Bid Proposal Window **15600**. The Bid Proposal window is made up of several different 'tabs'. These tabs are identified by the labels across the top of the window. Examples of the tabs are 'View Bid' **15602**, 'Items' **15604**, and 'Usage' **15606**.

The first tab visible on the Bid Proposal window when it is opened is the 'Main Info' tab **15608**. The 'Main Info' tab is where general information for this proposal is entered. The main info tab on the Bid Proposal window shows general information, comments, and dates associated with this bid. Such information includes:

- Proposal ID: Unique identifier for this proposal. Generated by the Supply System, Noneditable, used for identification on specific reports and for retrieval of proposals.

- Proposal Name: Unique name for this proposal. It should be representative of the type of proposal the user is completing, and will be the primary method of identifying and retrieving the proposal later.
- Buyer Name: Name of buyer creating this proposal. Used to retrieve proposals by buyer.
- Proposal Due Date: Date that this proposal is due back to the Supply Chain Coordinator. Used on the proposal Cover Letter report.
- Contract Begin Date: Date that contract associated with this proposal begins. Used on the proposal Cover Letter report, and used to determine contract length for usage calculations.
- Contract End Date: Date that contract associated with this proposal ends. Used on the proposal Cover Letter report, and used to determine the contract length for usage calculations.
- Actions: Actions are comments or activities associated with this proposal. A proposal can have an unlimited number of actions as long as each action has a date and text. To add, delete, or print actions use the buttons on the window's toolbar **15700**, shown in Figure **157**.

After entering all of the information on the 'Main Info' tab the user can move to the next tabs, 'Items', 'Suppliers', and 'DCs'. These tabs are where the creation of a proposal begins. Although these elements are added on three separate tabs in this description, the methods used to include them are consistent.

Figure **158** illustrates the page **15800** under the Items tab. As shown, the left side of the page under each tab is the search and selection area. It functions in the same manner as the rest of the Supply System, in that the user enters a search string and clicks search, and similar names to the search string will be retrieved. For example, as shown in Figure **159** which illustrates the page **15900** under the Items tab upon selection of the Search button, all Items beginning with "CUP-HOT" would be retrieved. After clicking on the 'Search' button, the present invention shows a list of Items matching 'CUP-HOT'.

These tabs are "Drag and Drop" enabled; the user can select any of the items found and by clicking on the relevant item and dragging it to the right, it is now included in the analysis. By the same token, dragging the selected item to the left will remove it from the proposal. The buttons between the search and selected areas can also can move the selections. Button **15902** moves whatever has been highlighted on the left and includes it in the proposal. Button **15904** moves all items retrieved and includes them in the proposal. Button **15906** removes everything previously included in the proposal. Button **15908** removes only the highlighted selections from the proposal. Further, multi-select using CTRL+Click, and double clicking on any Item to move it are preferably also supported.

After a search for the desired item(s) has been performed, another search can be performed by clicking the 'Query' button and entering new search criteria.

It is important to note that in order to include any of the elements in the proposal, they must have previously been entered in the Supply System. The Supplier selection tab retrieves all active and un-approved Suppliers that match the search criteria and have at least one active contact. Inactive elements should not appear as a relevant selection in any of the tabs.

Since the DCs are generally consistent between proposals, a complete list of all active DCs is retrieved and then the user simply selects the relevant one, or in most cases presses the button to move them all to the right.

When the user leaves any of the tabs for the first time, the new elements are propagated to all dependent tabs. For example, if a new Item is added, that implies new usage information.

Figure **160** illustrates a page **16000** under the FOB Price tab for selecting FOB price component worksheets. As part of the proposal process Suppliers are asked to bid on FOB prices. The worksheets that are provided to the suppliers can vary depending on the

type of items included in the bid. There are several template FOB Price component worksheets in the system. A different worksheet may be associated to each item. For example, if a proposal involving mayonnaise were being prepared, the user would select the 'Mayonnaise Component' worksheet as shown in Figure **160**.

An association between a worksheet and each item must be generated before continuing to the next tab. Once all FOB price components are selected, the remaining tabs are enabled.

The selected worksheets can be printed along with the bid and can be viewed on the 'Template' tab. For more information on the 'FOB Price Component Worksheet' see the Reporting section of this document.

The Proposal mechanism for estimating usage functions in almost exactly the same manner as in the Least Cost Analysis System. It is comprised of two tabs; the DC/Rest tab is used for estimating restaurant growth by DC, and the Usage tab to estimate same store or item growth. The values from the first tab are used in the Usage tab to determine the projected usage. For more information on general processing in these tabs see the section entitled Distribution Center Usage.

Figure **161** depicts a window **16100** for managing Distribution Center usage. Although the use of the DC/Rest and Usage tabs are almost identical there are a few differences and should be pointed out. Also, the tabs may look the same but the data stored here are used for different purposes in each process. The differences in the proposal system are explained below. Usage information, Gross Weight and Item Cube can be used to determine if LTL sheets are printed and/or RDC's are included.

- Gross Weight the approximate gross case weight of each item.
- Item Cube the approximate case volume of each item.
- Projected Usage Projected usage for the proposal contract period.

For example, if the two (2) week truckload weight estimate (two week usage x gross weight) is less than the system weight default (48,000 LBS) OR the two week volume estimate (two week usage x item cube) is less than system cube default (3000 CFT) for any DC, an LTL worksheet is generated and RDC records will appear on the Truckload Freight Worksheet. The exact gross weight and cube will be requested on the Item Worksheet. Realize that the total gross weight for a truck is 45,000 lbs. LTL rates can be requested for any lane with less than 48,000 lbs. to avoid having to go back to the Supplier for additional rates. Optimal Product Routing in this example uses 43,500 lbs. gross weight of product, which accounts for pallet weight. For a detailed look at the components and processing of the Usage Estimator, see the section of the same name.

Figure **162** is a flowchart of a process **16200** for creating a bid proposal utilizing a supply chain graphical user interface in accordance with an embodiment of the present invention. A graphical user interface is displayed in response to a request to create a bid proposal in operation **16202**. Utilizing the graphical user interface, information is received in operation **16204** so that a bid proposal can then be generated using the information in operation **16206**. The received information may include a buyer name, a due date, a contract begin date, and/or a contract end date.

In one aspect of the present invention, the bid proposal may be generated utilizing templates. In another aspect, the information may be selected from a displayed list of available information. In a further aspect, items capable of being associated with the bid proposal may also be displayed. In such an aspect, the information may further include usage information associated with the items. In an additional aspect, the information may be received utilizing a network.

Proposal Reporting

In order to create a proposal, the user first edits template documents and then selects which reports will be included in the proposal. Figure **163** illustrates a Templates button **16300** which calls the Template window **16400** shown in Figure **164**.

The Proposal consists of two types of reports, Microsoft Word and Coordinator Supply. Microsoft Word reports are formatted and some are editable within Word whereas the Supply System reports are generated by the Supply System but are not editable. The following is a list of reports available in the Proposal System and how they are generated.

The proposal system allows editing of a Microsoft Word template document which is then used to create the actual document that will be included in the proposal. Figure **165** illustrates a window **16500** displayed upon selection of the Templates tab. A drop down list box **16502** shows which template documents can be edited. As shown in Figure **165**, the available templates include the Cover Letter and Price Component Worksheet. To start Microsoft Word and edit the selected template, the user double clicks on the document in the window.

Once Microsoft Word has started the user can edit the template document to fit his or her needs. The proposal Cover Letter will be used herein as an example in order to demonstrate how to use the template documents. The template bid cover letter is the basic cover letter used to create supplier-specific cover letters.

Only generic changes that apply to all suppliers should be made in the template. When the proposal is created, this document will be copied to all the suppliers and contacts associated with this proposal. The user will be able to edit a supplier specific cover letter later in the proposal process.

When editing of the cover letter ahs been completed, the document is saved by selecting **File, Update** from Microsoft Word's menus **16600**, as shown in Figure **166**. Now the user may return to the Supply System and continue with the proposal process.

Select **Update** to update the template

After the user has completed editing the templates, the proposal can be created.

Before creating the proposal, the user is allowed to select which reports should be included. Figure **167** is an illustration of the page **16700** presented upon selection of the Create Bid tab. To design/customize the appropriate proposal and select reports, the user checks or unchecks the appropriate boxes. When the user is satisfied with the selections click the 'Create Bid' button **16800** on the toolbar. See Figure **168**.

The present invention then creates all of the documents needed to print this proposal. The user can view any of these reports by making the appropriate selections in the drop down list boxes **16900** shown in Figure **169**. The user also has ability to view any of the proposal reports one at a time and for any specific supplier.

Printing

The proposal system allows a certain degree of flexibility when it comes to printing the proposal. The user can either print out one report for a specific supplier (the currently selected report shown on the window) or print the entire proposal. When printing the entire proposal, the documents will be collated by supplier. Microsoft Word documents will be printed first for all suppliers followed by the Coordinator generated reports. The different printing mechanisms can be controlled by the buttons on the toolbar, shown in Figures **170** and **171**. For example, the Print button **17000** Prints the currently selected report on the window. The Print Bid button **17100** prints the entire proposal.

This will print all of the reports that have been checked off on the Create Bid tab, only choose this option if the user is sure that he or she is ready to print the entire proposal. The proposal is now ready to be sent out. When proposals are returned, the information can now easily be moved from the proposal process into the Least Cost Analysis.

Figure **172** is a flowchart of a process **17200** for proposal reporting utilizing a supply chain graphical user interface in accordance with an embodiment of the present invention. A proposal is identified in operation **17202** utilizing a graphical user interface. A plurality of components of the proposal are then indicated utilizing the graphical user interface in operation **17204**. The selection of the components is subsequently allowed

utilizing the graphical user interface in operation **17206** so that a proposal can be created utilizing the selected components in operation **17208**.

In one aspect of the present invention, the proposal may be generated utilizing templates. In another aspect, the graphical user interface may be displayed utilizing a network browser. In a further aspect, the proposal may be editable. In an additional aspect, the proposal may be read-only. In yet another aspect, the proposal may include a bid proposal for goods to be shipped from a supplier to an outlet.

Creating a New Analysis

A Least Cost Analysis can be created in either of three ways. The first and probably the most cumbersome method requires building the analysis from scratch. The second method integrates the Bid proposal selections and creates the basis for a new analysis. Finally, the "New Using Previous" feature can be used, which will create an entire copy of a previous analysis version and allow the user to make any necessary modifications.

After selecting the Least Cost Toolbar button **17300** (see Figure **173**), the user is prompted with the standard query screen **17400**, shown in Figure **175**. The New button is selected. The details of the actual Analysis features are covered in a section below.

The New Using Previous option is selected from the menu **17500** shown in Figure **175**. Similar to the Cost Matrix feature of the same name, the user can make a complete copy of a previous Analysis version. However, unlike the Cost system there is no requirement that Analysis' dates cannot overlap.

Referring to the Bid Integration feature, since a lot of the information selected by the user in the Bid Proposal is also relevant to a Least Cost Analysis, the present invention provides the ability to integrate the Bid information in the analysis.

To use the Bid Integration feature, the user selects the New option as above and the first column on the Analysis Tab will provide an alphabetical list of all Bid Proposals in the system. This will copy the Items, Distribution Centers, DC Usage and usage related information such as same store and restaurant growth estimates from the Bid. The user can change the Bid selection or remove it by selecting "(None)" from the drop down list box **17600** shown in Figure **176**.

Figure **177** is a flowchart of a process **17700** for analysis creation utilizing a supply chain graphical user interface in accordance with an embodiment of the present invention. A graphical user interface is utilized in operation **17702** to select between a plurality of options with each option corresponding to a separate technique of creating an analysis. A new analysis is generated upon the selection of a first of the options in operation **17704**. Upon the selection of a second of the options, a previous analysis is edited in operation **17706**. Also, upon the selection of a third of the options, a bid proposal is integrated with an integrated analysis in operation **17708**.

In one aspect of the present invention, the selection may be received utilizing a network. In such an aspect, the network may include the Internet. In another aspect, the analysis may be a least cost analysis. In a further aspect, the analysis may be capable of being accessed via a network-based interface.

Analysis Tab & Version Control

Figure **178** illustrates a window **17800** displayed upon beginning an analysis. The information displayed in the window includes:

- Analysis Name: The name that identifies the analysis in the system.
- Analysis ID: Unique identifier assigned by the system.
- Buyer: The buyer responsible for this analysis.
- Period of Agreement: The dates that cover the range of the analysis. The dates are used to calculate usage estimates if required, and ultimately to create the Cost Matrix.

- Unit of Measure The units that pricing, plant capacities etc., will be entered.

Figure **179** depicts an option selection window **17900**. Each of the following options can be changed by analysis version:

- Version Name: The name that uniquely identifies each run of the analysis. Version Control is handled in more detail later in this section.
- ..max # of FOBs..: By changing this option, either a single source (One FOB per DC) or a multi-source problem is run. Everything other than "One FOB" is considered multi-source with available selections from two to five FOBs and unlimited.
- ..pricing method..: The present invention supports three types of pricing, FOB, FOB + Freight and Delivered. Each version can have a different pricing method. Pricing is covered in detail in the section entitled Pricing.
- ..Upcharge(Downcharge)..: Any adjustment positive or negative that should be made to the Invoice FOB calculated by the system.
- ..RDC Truckload Validation..: Ignores the fact that the total usage on winning OPR lanes for an FOB may not be enough to warrant RDC routing.
- Solution Strategy For very difficult problems,, the present invention provides an alternate strategy which a user can choose to determine the least cost. Generally, for problems that are taking fifteen minutes or more, this strategy is recommended. It will arrive at the same answer as the standard strategy but in a much shorter time. Since most of the solutions determined by the solver are returned in seconds the "Cuts" strategy would actually add unnecessary overhead for simple problems.

When the analysis tab is selected, the version button **18000**, shown in Figure **180**, is displayed on the toolbar. Unlimited versions of an analysis can be created simply by pressing the button. Figure **181** illustrates a verification window **18100** that appears upon selection of the version button.

The name assigned to the new version should be representative of the variance being tested in order to easily differentiate between versions later. A discussion of the methods provided for completing version comparisons is presented in the section entitled Solving and reviewing the Solution.

Items, FOB, DCs and Usage information are not considered to be version dependent, and hence this information cannot be changed once a second version of an Analysis has been created. However, a variety of methods of excluding this information from consideration between versions is provided by the present invention.

Figure **182** is a flowchart of a process **18200** for analysis version control in a supply chain management framework in accordance with an embodiment of the present invention. A plurality of separate versions of an analysis are maintained in a database in operation **18202**. A request for an additional version of the analysis is received utilizing a graphical user interface in operation **18204**. In response to the request, the additional version of the analysis is generated in operation **18206**. A plurality of parameters of the additional version are allowed to be changed utilizing the graphical user interface in operation **18208**. The parameters that are allowed to be changed include: a maximum number of supplier sources, a pricing method, and/or an invoice adjustment.

In one aspect of the present invention, the additional version of the analysis may be named in accordance with a variance associated with the additional version. In another aspect, the request may include the selection of an icon on the graphical user interface. In a further aspect, the analysis may be a least cost analysis. In an additional aspect, the request may be received utilizing a network. In yet another aspect, the parameters of the additional version may be capable of being changed utilizing a plurality of fields on the graphical user interface.

Adding Items, FOBs and DCs

Although Items, FOBs and DCs are added on three separate tabs in the Analysis, the methods used to include them are consistent. Figure **183** depicts a tab page **18300** for adding and removing FOBs from an analysis.

The left side of each tab is the search and selection area. It functions in the same manner as the rest of the system, in that a search string is entered and a search button is selected, and similar names to the search string will be retrieved. For example, in the case shown in Figure d53, all FOBs beginning with "DOP" would be retrieved.

These tabs are "Drag and Drop" enabled, allowing selection of any of the matches found and by clicking on the relevant match and dragging it to the right, it is now included in the analysis. The buttons **18302** between the search and selected areas can also move the selections, similar to the manner discussed above with reference to Figure **183**. Multi-select using CTRL+CLICK and double clicking on any Item to move it, are also supported. It is important to note that in order to include any of the elements in the analysis, they must have previously been added to the system.

The FOB selection tab retrieves all active and un-approved FOBs that match the search criteria. Inactive elements will never appear as a relevant selection in any of the tabs.

Since the DCs are generally consistent between each analysis, a complete list of all active DCs is retrieved by default and the user selects the relevant DCs or in most cases presses the button to move them to the right.

As shown in Figure **184**, which illustrates a portion of the Item tab page **18400**, the Item tab has an additional editable column **18402** for the Item conversion factor.

- Conv. Factor: If the analysis is using units other than cases, the present invention converts any input data to the relevant lowest common denominator. For example, if pounds are being used and there were 36 lbs. of a product in a case,

the conversion factor would be 36. The default is always one (1). since the large majority of analyses will be in cases.

When leaving either of the tabs for the first time, the system propagates the new elements to all dependent tabs. For example, if a new FOB is added, that implies new pricing, lanes, capacity etc. will also be added and the relevant tabs for each information group are updated.

Figure **185** is a flowchart of a process **18500** for editing supplier information in a supply chain management framework in accordance with an embodiment of the present invention. A graphical user interface is displayed that indicates a plurality of items in operation **18502**. The selection of one of the items is allowed utilizing the graphical user interface in operation **18504**. In response to the selection, a supplier associated with the item is depicted in operation **18506**. A plurality of parameters of the supplier are also allowed to be changed in operation **18508** utilizing the graphical user interface.

In one aspect of the present invention, the selected parameters may include a case cube, cases per truckload, and/or a gross weight. In another aspect, the changes to the parameters may be updated in a database. In such an aspect, the changes to the parameters may be updated utilizing a network. In one aspect, the network may include the Internet. Additionally, the changes to the parameters may be updated in response to the selection of an icon of the graphical user interface.

Item FOB Information

Figure **186** illustrates a page **18600** that is displayed upon selection of the Item/FOB tab. As part of the Bid proposal process, the information that has been entered for each Item FOB combination in the system is provided to the Suppliers for correction and/or additions. The Item/FOB tab in the analysis is provided for entry of any changes that they may have made. Even if the analysis is not based on a Bid, some of the information on this tab is crucial to the solver process.

- Case Cube: the actual case cube or volume. It is used in the calculation of the per case two week cube on a lane (item cube x two week usage), which is required both by the optimal product routing (OPR) process and in determining which lanes have potential for LTL or RDC shipments. A detailed explanation of OPR process is provided in the section entitled Optimal Product Routing, below.
- Cases per Truckload: All freight rates requested by the Bid are truckload rates. Since the majority of analyses are performed in cases, cases per truckload may be used to determine the case freight.
- Gross Weight: the actual gross case weight. It is used in the calculation of the per pound two week usage on a lane (gross weight x two week usage), which is required both by the optimal product routing (OPR) process and in determining which lanes have potential for LTL or RDC shipments. A detailed explanation of OPR process is provided in the section entitled Optimal Product Routing, below.

The remaining information is also important, however it is not a factor in determining a Least Cost solution. It is stored separately from the Item / FOB Cost information so that cases per truckload or case weights can be used without effecting the data that is currently considered production.

At the point, the analysis has been completed and a version that will become the production model has been selected. The Cost information is updated by selecting the Update button **18700** on the toolbar. See Figure **187**.

Select the Update button and the present invention creates any Item FOB combinations that do not exist in the Cost system and update any existing combinations with the information the user may have entered to complete the analysis.

Figure **188** is a flowchart of a process **18800** for adding components in a supply chain management analysis in accordance with an embodiment of the present invention. A query is entered in a search field of a graphical user interface for searching for a plurality

of supply chain components in operation **18802**. Results of the search are listed in a results field of the graphical user interface in operation **18804**. The results are then selected from the results field for inclusion in a supply chain analysis in operation **18806**.

In one aspect of the present invention, the selected supply chain components may include supplier sites, distributor sites, and/or items. In another aspect, the results may be selected for inclusion in the supply chain analysis utilizing icons. In such an aspect, the results may also be selected one at a time for inclusion in the supply chain analysis utilizing a first icon. The results may also be selected all at once for inclusion in the supply chain analysis utilizing a second icon. In a further aspect, the supply chain components may include items while the graphical user interface includes a field for entry of a conversion factor. In an additional aspect, the results may be selected for inclusion in the supply chain analysis utilizing a drag and drop feature.

Capacity & Excluding FOBs

The system supports capacity constraints at two levels. Both FOB minimum requirements and capacities can be set. They can also be set at the Supplier level.

Figure **189** is an illustration of an exemplary analysis window **18900** displayed upon selecting a Capacity tab. For example, in this analysis, two levels of capacity constraints have been added for Lamb-Weston Inc. As a Supplier, Lamb must get at least 200 million pounds of product independent of any further requirement at the FOB level. Both the Pacso, WA and American Fall, ID FOB points have minimum requirements of 90 million and maximum capacities of 110 million. The remaining FOB in Richland, WA has essentially no minimum, but a 55 million capacity. Although the sum of the plant minimums is less than the Supplier minimum, the solver will allocate business to match the Supplier constraint while still ensuring that each FOB constraint is matched. Naturally, the sum of the plant maximums cannot be less than a Supplier minimum.

As mentioned above, once a second version of an analysis has been created, it is not possible to remove Items, FOBs or DCs. However, a Supplier or individual FOB points can be excluded on the Capacity tab.

Figure **190** illustrates another analysis window **19000**. In this example, two of McCain Foods FOB points have been excluded from this version of the analysis. The solver will not be passed the FOB points or any related information such as lanes, pricing etc. If the "Include" has been changed to "no" at the Supplier level, all the FOB points would be automatically excluded.

Figure **191** is a flowchart of a process **19100** for managing supplier sites in a supply chain management framework in accordance with an embodiment of the present invention. A plurality of supplier sites are displayed utilizing a graphical user interface in operation **19102**. A minimum value and a maximum value of capacity levels associated with the supplier sites are determined utilizing the graphical user interface in operation **19104**. The supplier sites are conditionally excluded from a supply chain analysis utilizing the graphical user interface in operation **19106**.

In one aspect of the present invention, terms of a contract associated with the supplier sites may also be identified utilizing the graphical user interface. In another aspect, the supplier sites may be conditionally excluded utilizing a toggle button. In a further aspect, the supplier sites may be conditionally excluded separately for different versions. In an additional aspect, the minimum value and the maximum value of the capacity levels may be determined utilizing a network. In such an aspect, the minimum value and the maximum value of the capacity levels may also be determined utilizing TCP/IP protocol.

Pricing

On the analysis tab, the option of selecting the pricing method being for this analysis version is presented. Depending on the selection previously made, the Price tab will be

used for FOB or FOB & Freight pricing or the Price Dlvd tab for delivered pricing. The present invention also provides the ability to factor volume pricing into the analysis.

Figure **192** is a depiction of an FOB pricing window **19200**. In the simplest of cases, a price (Contract FOB) will have been negotiated for each Item and FOB combination in the analysis. Since the solver is passed a basket (weighted average across all items in the analysis) price for each lane, no price field can be left blank. In the example shown in Figure **192**, bulk mayonnaise has a price of $8.42 from the Hudson Industries Troy, Al plant and bulk tartar sauce is priced at $9.23.

Two forms of volume based pricing are supported in the Least Cost system: Supplier volume and FOB volume. They are mutually exclusive in that by version there can be only one type of pricing.

Figure **193** depicts an illustrative FOB Volume Pricing screen **19300**. In this example, American Food Service offers two volume pricing discounts at their FOB point. Any volume awarded to them from 0 to 2,090,000 pounds has a price of $1.0026/pound. If they are awarded volume between 2,090,000 and 2,508,000 that price drops for all volume to $1.0016/pound. For any volume over 2,508,000 pounds the price drops to $1.0010/pound. As the solver is deciding the optimal distribution model, if their FOB is awarded volume over any of the breakpoints it will grab the lower price and keep solving until the least cost is determined. The new price applies to all volume awarded from that FOB point.

In many cases the Suppliers may not be as concerned about the volume awarded to each individual FOB point as to the overall volume awarded across all their FOB points.

Figure **194** depicts a Supplier Volume Pricing window **19400**. In the pricing scheme shown in Figure **194**, Ventura has negotiated a Supplier volume pricing breakpoint. For any volume awarded between 0 and 999,999 cases the price for bulk mayonnaise will be $8.94 and $9.51/case for bulk tartar from Chambersburg and $9.12 and $9.58/case from

City of Industry. If the combined volume across both of their FOB points exceeds 100,000 cases, the price drops to $8.84 and $9.41/case from Chambersburg and $9.02 and $9.48 from City of Industry. This price reduction is independent of the allocation to either FOB point as long as the overall award exceeds the Supplier volume breakpoint. The new price applies to all volume awarded.

It is also possible to have the new solver determine the Least Cost when the pricing is quoted on a delivered basis. Once a pricing method of "Delivered" is selected on the analysis tab the Price Dlvd tab is enabled. Figure **195** shows a Delivered Pricing screen **19500**.

Pricing is entered in the same manner as FOB pricing, and as in FOB pricing, the user must provide a price for all Items on a lane if at least one price is entered. Lanes can be excluded simply by providing no prices for those lanes.

Figure **196** is a flowchart of a process **19600** for pricing in a supply chain management framework in accordance with an embodiment of the present invention. A selection of at least one of a plurality of types of pricing schemes is received utilizing a graphical user interface in operation **19602**. Utilizing the graphical user interface, a plurality of supplier sites are then displayed in operation **19604**. At least one of a plurality of pricing fields are depicted adjacent the supplier sites based on the selection utilizing the graphical user interface in operation **19606**.

In one aspect of the present invention, the received pricing schemes may include at least one of supplier site pricing, volume pricing, and/or delivered pricing. In another aspect, the received pricing schemes may include all of supplier site pricing, volume pricing, and delivered pricing. In a further aspect, pricing information entered in the pricing fields may be utilized in a supply chain analysis. In an additional aspect, the selection may be received utilizing a network. In even another aspect, the selection may be received utilizing an icon of the graphical user interface.

Distribution Center Usage

The Least Cost mechanism for estimating usage functions operates in the same manner as in the Bid System. It is comprised of two tabs, the DC/Rest tab is used for estimating restaurant growth by DC, and the Usage tab to estimate same store or item growth. The values from the first tab are used in the Usage tab to determine the projected usage. A more detailed explanation of the usage calculations is included in the section entitled Usage Estimator, below.

Figure **197** is a depiction of a Projected Restaurant Growth screen **19700**. The present invention provides the ability to estimate restaurant growth at two levels. First, by entering a percentage in the 'Total Rest. Growth Amount' **19702**, the value will be copied and applied to all of the restaurant growth percentages at each DC. In the example shown in Figure **197**, 5.00% was entered and propagated to each DC. The default value can also be overridden and data entered directly for each individual DC. Several of the fields are described below.

- Total Rest. Growth Amount Any value entered will be applied uniformly across all DCs in the current analysis.
- Restaurant Growth % The user can override the overall amount at each DC simply by entering an alternate estimate percentage.
- Projected Avg. Rest. Count Based on the percentages entered, a projected restaurant count is calculated. The user also has the ability to enter values directly simply by entering an alternate value in the relevant cell. The projected restaurant will be carried over to the 'Usage' tab and will affect the DC's projected usage.

Figure **198** illustrates a Projected Usage Estimation screen **19800**. Several fields of the screen are described below. The projected usage for each DC is calculated based on projected restaurants served, data retrieved from Coordinator Link data and DC/Item Growth (same store growth). This projected usage number will be used by the solver for capacity information and also in output reports.

- Item Growth % For each Item in the analysis, the user can enter an overall estimate for same store or item growth. As in the restaurant growth tab this value will be applied uniformly across all DCs.
- Usage Period Contract period for this analysis. Used to calculate the length of the contract in order to determine previous and projected usage.
- Previous Usage Previous Usage is the sales by cases reported to the Supply Chain Coordinator by each DC through the system Link. These sales are based on a time period that is in conjunction with the 'Usage Period'. This period is computed by taking the most recent date which the Supply Chain Coordinator has received data from all of the DCs and using it as the usage end date. The usage begin date is then computed by going backwards for the length of the proposed contract. For example, in the situation shown in Figure **198**, the length of the contract is 1 year. If the most recent date that all DC data had been received was 3/1/01 then the previous usage period would be 4/1/00 to 3/1/01. This would provide a previous usage for the most recent twelve month period in the system.
- Projected Rest. Count The projected restaurant count is the number of restaurants that will be served by a DC for the period of the proposed contract. This number is copied from the DC/Rest tab.
- Coverage Factor % The coverage factor percentage is a number devised to correctly calculate the DC's projected usage. Coverage Factor is the percent of total restaurants that this DC has served this product to over the past year. For example, if a DC serves 200 restaurants in one month but only sells this item to 100 of those restaurants then the coverage factor would be 50%. If the item was sold to all 200 restaurants then the coverage factor would be 100%.
- Avg. # RM Average number of restaurant months. This figure represents the average number of units sold to a restaurant for this item for any given month. This average is a 12 month rolling average calculated based on the data reported to the Supply Chain Coordinator by the DCs.
- DC/Item Growth At the DC level, the user can override the overall growth % by entering an alternate value for the relevant DC.

- Projected Usage The actual usage estimate for each Item / DC combination. Initially the projected usage will be calculated based on the following formula:

(Projected Rest. Count * Avg. # RM * Coverage Factor % * DC/Item Growth * Number of Months in Contract)

By editing the DC/Item Growth percentage (or overall Item Growth %), the projected usage can be manipulated to the desired level. The user can also directly edit the projected usage amount which will adjust the DC/Item Growth amount accordingly. Usage estimates calculated by the system are always in cases; hence if the user is entering pricing, volume or capacity constraints in any other unit, these values should be modified appropriately.

Note that the previous usage amount is not used in the calculation of the projected usage amount. It is used as a guide only. In the example shown in Figure **198**, no overall Item growth percentage was used, but chicken patty's were projected to grow by 4.00% at the Ameriserve in Omaha and 5.00% at the Ameriserve in Plymouth.

Figure **199** is a flowchart of a process **19900** for projecting distribution center usage in a supply chain management framework in accordance with an embodiment of the present invention. A plurality of supply chain distributors are displayed utilizing a graphical user interface in operation **19902**. The entry of a growth value is allowed in operation **19904** utilizing the graphical user interface so that a projected parameter amount associated with the supply chain distributors can then be calculated based on the growth value in operation **19906**.

In one aspect of the present invention, the growth value may include a restaurant growth percentage. As a further aspect, the projected parameter amount may include a projected restaurant count. In another aspect, the growth value may include an item growth percentage. In a further aspect, the projected parameter amount may include a projected

item usage amount. In an additional aspect, the projected parameter includes an editable default value.

Lane Restrictions

In the Least Cost system, the ability is provided to override any solution that the solver determines and force certain lanes. The overrides can be established before the solver runs.

It also a good habit to run a least cost version without any lane restrictions, so that an estimation of the relative cost of forcing or excluding lanes can be readily determined.

Figure **200** illustrates an Excluding Lanes screen **20000** displayed upon selection of a Lane Restrict tab. In an earlier section, a description of excluding Suppliers and/or FOB points using the "Include" indicator was set forth. This is related to the Lane Restrict tab in that if an FOB point is excluded from an analysis version, the lanes are automatically excluded from that FOB point to each DC. In the example shown in Figure **200**, Cavendish Farms was excluded; hence all lanes from that FOB are marked as excluded. The solver will never receive these lanes as potential choices when determining the least cost. It is also possible to exclude individual lanes from this tab. However, the user cannot include a lane if the FOB point has been excluded on the Capacity tab.

It may also be necessary to ensure that certain lanes are forced regardless of whether the lane assignment will prevent the least cost from begin achieved. Figure **201** is a depiction of a Forcing Lanes window **20100**.

In this example, the "Required" option has been selected for the lane from J.R. Simplots Hermiston FOB to Post Albuquerque. The solver will allocate this lane prior to beginning its optimization calculations, hence ensuring that the remaining lane allocations will still minimize the total cost given the lane requirement.

In a multi-source problem, lanes can still be forced, although without adjusting the supporting input the FOB may also receive another DC. For example, if a user wishes a lane to be forced but not allow the relevant FOB to get another DC, the user can simply make the FOB's maximum the DC's usage.

If the product is being single sourced (1 FOB : 1DC), a lane cannot be forced twice. For example if a user attempted to also force the Lamb FOB to Post Albuquerque, the message screen **20200** shown in Figure **202** would get the following message.

The third Lane Restriction option is marked as Solver in the previous example, and simply means that the lane is available to the solver as a potential lane in the least cost solution.

The Honor TL Rate boxes **20002** (Figure **200**) are used to specify whether or not the Supplier will Honor Truckload (TL) rates for shipments that are not a Full Truckload. See the section below entitled Optimal Product Routing.

Figure **203** is a flowchart of a process **20300** for restricting lanes in a supply chain management framework in accordance with an embodiment of the present invention. A plurality of distribution centers of a supply chain are displayed utilizing a graphical user interface in operation **20302**. A lane restriction of each of the distribution centers is then designated utilizing the graphical user interface in operation **20304**. The distribution centers are then conditionally involved in a supply chain analysis based on the designation in operation **20306**.

In one aspect of the present invention, it may be determined whether a supplier site has been excluded from the supply chain analysis so that the lane is involved in the supply chain analysis based on the determination. In another aspect, the lane may be allocated prior to the supply chain analysis upon the lane restriction of the distribution centers being designated as required. In a further aspect, the lane may be excluded during the supply chain analysis upon the lane restriction of the distribution centers being designated

as excluded. In event another aspect, the lane may be included during the supply chain analysis upon the lane restriction of the distribution centers being designated as to be solved. In an additional aspect, the designation may be received utilizing a network.

Freight

Freight quotes in the least cost system can either be Truckload or LTL.

Figure **204** is an illustration of a Truckload Freight window **20400** displayed upon selection of a TL Freight tab. For each DC and FOB in the analysis, an input area **20402** is provided for the Truckload Freight amount. Freight is assumed to be consistent across all items in the analysis. Prior to the solver run, the TL freight amount is converted to a case and/or unit freight rate using the Item/FOB tab cases per truckload, and the Item tab conversion factor. If the usage estimates entered suggest that an RDC rate may be applicable on any of the lanes, a lane from the FOB is automatically added to the relevant RDC to this tab.

- Lane Distance: This amount is used in estimating freight competitiveness between the Supplier quote and internal estimates. The present invention automatically populates this column from the Supply System.

Note that omitting a rate for a lane has the same effect as excluding the lane.

Figure **205** illustrates an LTL Freight page **20500**. The Bid system automatically generates an LTL worksheet if it determines that certain lanes have the potential to order LTL. Based on the Usage estimates entered or calculated by the system and the gross weight or cube per case entered on the Item/FOB tab, an identification is made as to which lanes have the potential to order LTL and lanes on the LTL Freight Tab are automatically populated.

In the example shown in Figure **205**, O.K. Foods has quoted LTL rates from their Fort Smith FOB to ProSource Atlanta and Burlington. All quotes are in $CWT (hundred weight), hence the Atlanta rate is $165 ($1.10 * 150) and the Burlington rate is $400 (The LTL minimum of $400 is not satisfied by the quoted rate of $180 (150 * 1.2)). The Optimal Product Routing (OPR) process will determine which rate to use based on its estimates of two week usage and compare the basket cost with both TL and RDC rates to determine the optimal routing. The entire OPR is discussed in detail in the section below entitled Optimal Product Routing.

Preferably, as projected usage estimates are adjusted on the Usage tab, rows will be added and deleted to this tab when relevant.

Figure **206** is a flowchart of a process **20600** for managing freight in a supply chain management framework in accordance with an embodiment of the present invention. A graphical user interface is utilized to display a plurality of distribution centers of a supply chain in operation **20602**. Next, in operation **20604**, a truckload freight value is received in an input field of the graphical user interface. The truckload freight value is converted in operation **20606** so that a supply chain analysis can then be performed using the converted truckload freight value in operation **20608**.

In one aspect of the present invention, a suggested value may be displayed in an output field. In an additional aspect, the suggested value may be received from a supply chain manager utilizing a network. In another aspect, the truckload freight value may be converted to a case value. In a further aspect, the truckload freight value may be converted to a freight rate value. In an additional aspect, the truckload freight value may be received utilizing a network.

Regional Restrictions

Figure **207** depicts a restriction window **20700**. The present invention provides the ability to force DCs in a region to be awarded the same FOB point. In the example

shown in Figure **207**, a region is established to combine McCabe's DC in Portland and Restaurants North West DC in Alaska. By selecting the Force FOB option to "Yes", the solver will ensure that both DCs receive the same FOB point.

Figure **208** is a flowchart of a process **20800** for imposing regional restrictions in a supply chain management framework in accordance with an embodiment of the present invention. A plurality of distribution centers of a supply chain are displayed utilizing a graphical user interface in operation **20802**. A free on board (FOB) point associated with a region in which the distribution centers reside is identified in operation **20804**. The distribution centers are then forced to use the FOB in response to a user action utilizing the graphical user interface in operation **20806**.

In one aspect of the present invention, the user action includes the selection of an icon. In another aspect, the region may be user-defined. In a further aspect, a site role of each of the distribution centers may also be displayed utilizing the graphical user interface. In even another aspect, the graphical user interface may be displayed utilizing a network. In an additional aspect, the graphical user interface may be a browser-based interface.

Optimal Product Routing

One of the major features in the least cost system is the Optimal Product Routing (OPR) feature. Because the present invention can factor Truckload, RDC and LTL lanes into the least cost analysis, the OPR engine will automatically determine the optimal routing prior to passing the data to the solver. OPR is automatically run prior to running the solver, but can also be run at any time using the Routing button **20900** on the toolbar. The Routing button is shown in Figure **209**.

Optimal Product Routing is the process of determining for each lane in an analysis, the lowest cost routing (Full Truckload [TL], LTL, RDC) for the Market Basket of Product. The capability is built directly into the Least Cost system.

OPR processing includes determining two-week usage as well as determining available routing information.

Regarding two-week usage, the weight and cube of product shipped during a two-week period determines the possible routing types. Lanes with either a two-week weight of more than the amount specified in the analysis (typically 43,500 lbs.), and a two-week cube of more than 3,000 Cubic Feet will only travel TL. Those with less (non-truckload) may also travel LTL, and in the case of Dry product, may also travel RDC. Two-week weight usage is determined for all lanes included in the current version of the analysis.

When determining available routing information, OPR finds the TL, LTL, and RDC information available for each lane and identifies incomplete or missing Freight information. It is important to gather freight quotes on all applicable routing types. For example, a Supplier may only quote an LTL or RDC freight for a non-truckload lane, yet due to the nature of the load it may cost less to ship the product with a standard truckload rate.

OPR operates under the following assumptions:

- Truckload There must be a TL freight amount. Even if available, LTL and RDC rates are not considered.
- Non-Truckload Any TL or acceptable LTL routing freight amount will suffice, yet quotes for all routing types are strongly recommended.
- Honor Truckload (TL) Rate For lanes that are not a Full Truckload, it is important to distinguish whether or not the Supplier will Honor Truckload (TL) rates. This is specified for each lane in the Lane Restrictions tab.

Consider a lane which costs $1,000 to ship for a product which normally has 1,000 Cases per Truckload. Please refer to Table 29, below. If usage warranted a Full Truckload, the freight per case would be $1 (#1)

Now assume that the two-week usage for this lane is only 500 cases. The $1,000 Supplier quote may imply either of the following:

- *Example #2.* The $1,000 rate is the price to ship the lane, whether it is 5 or 500 cases ($1,000 / 500 = $2 per case).
- *Example #3.* Since the Supplier ships other products to the DC (e.g. other BKC products, products from, other concepts) he assumes that all of his trucks will ship full. The Supplier therefore Honors the TL rates, and even though the two-week usage is only 500 cases, charges a per case freight as if the usage warranted a Full Truckload ($1,000 / 1,000 = $1 per case). In this case, it may be useful to choose Honor TL rates on the *Lane Restrictions* tab of the Least Cost system.

Table 29

#	Type	Truck Frt	CS / Truck	2-week Usage	Freight / Case	Explanation
1	TL	$1,000	1,000	1,000	$ 1.00	Frt / CS per Truck
2	TLMIN	$1,000	1,000	500	$ 2.00	Frt / Usage
3	HonorTL	$1,000	1,000	500	$ 1.00	Frt / CS per Truck

The status of Lane Freight information can be either Complete, Incomplete, or Optional:

- Complete — All relevant Freight information is available. OPR can continue.
  - Truckload shipments with Truckload rates
  - Non-Truckload, Dry shipments with TL, valid LTL, and RDC rates
  - Non-Truckload, Refrigerated shipments with TL and LTL rates
- Incomplete — Mandatory Freight information is missing. OPR cannot continue.

- Non-Truckload shipments with only an LTL Minimum rate provided (e.g. an LTL Minimum is provided, without specific weight class rates)
- Non-Truckload shipments with LTL rates provided without an appropriate LTL Minimum
- Non-Truckload shipments with LTL rates provided only for higher weight classes (e.g. A Supplier only provides a 10,001 - 20,000 lbs. rate for a lane with a 5,000 lb. Usage. This weight will never be satisfied.)

- Optional Requested (not mandatory) Freight info is missing. OPR can continue.
  - Non-Truckload shipments with some, but not all of the applicable quotes (e.g. Dry shipments consider RDC rates, Refrigerated/Frozen do not)
  - Non-Truckload shipments with LTL rates provided for weight classes below the appropriate usage (e.g. A Supplier only provides a 10,001 - 20,000 LBS. rate for a lane with a 22,000 lb. usage.)

In order to ensure the lowest pricing, Logistics recommends requesting all relevant freight information from Suppliers. OPR will not continue if any lanes are Incomplete. OPR can, however, at user request, continue even though the status of certain lanes are Optional. Realize however, that not requesting freight quotes on all applicable routing types may actually inadvertently place a Supplier at a competitive disadvantage. The Supply Chain Coordinator may award business based on Landed Cost, which includes freight. Performing a Least Cost analysis with missing freight information may yield inappropriate lane awards.

This information is available on the 'Solution Tab' of the Least Cost analysis under 'Optimal Product Routing Reports'. More information on these reports can be found in the following section.

The Least Cost system operates on a Market Basket concept for determining per case/unit and total shipment cost for all routings. It considers all Items shipping on a particular lane

in the relevant Unit (Case, Pound, Ounces) on which the analysis is based. For all routing types provided, OPR determines the Total Shipment amount for the entire usage specified, and the Unit Shipment amount required to ship a Unit of product.

Shipment Cost is calculated as follows:

- TL Product is shipped based on a Full Truckload freight quote. The Unit Shipment Cost is the Full Truckload cost / Units Per Truckload.
- TLMIN For shipments smaller than a Full Truckload, it may prove more cost effective to ship the Product via the quoted TL rate. This routing is referred to as a Truckload Min, whereby the shipment has a TL quoted freight with a Minimum Order Quantity (MOQ) specified. The Unit Shipment Cost is the Full Truckload cost / Usage, except in the case of *Honor TL Rate*, where it is the Full Truckload Cost / Units Per Truckload.
- LTL Product is shipped via an LTL carrier, that specializes in partial shipments. The shipment cost is based on a price per hundred weight, and possibly an overall minimum amount for the entire shipment. An LTL Minimum must be provided along with any LTL information. The Unit Shipment Cost is the Total LTL Shipment Cost / Usage.
- RDC For Dry Products only (excluding Alaska and Hawaii RDC's), the Product is shipped via the appropriate Re-Distribution Center (Prosource or Chicago Consolidated RDC). Unit Shipment cost includes Inbound freight to the appropriate RDC, the RDC markup, and Outbound freight to the DC. When a product is shipped RDC, all shipment amounts assume Full Truckloads.

Optimal Product Routing takes into account all of the available freight routing information and determines the lowest cost method of shipping the Market Basket of product for each lane. In the event of multiple routing types having identical shipment costs, OPR is decided in the following order of preference: TL, TLMIN, LTL, and RDC (Dry shipments only).

Winning routing types are chosen on a lane-by-lane basis. When considering all lanes, however, this may not always be feasible. Certain lanes may be considered an RDC Override, and Optimal Product Routing will determine the best routing excluding the RDC rates for these lanes. Presented below are two examples of this:

- **Insufficient Usage** - This occurs when the total usage is not sufficient to warrant a Full Truckload from the FOB to the respective RDC. For example, assume that OPR determined that FOB1 shall service DC1 and DC2 via the RDC, each with a respective usage weight of 10,000 lbs. The total usage from FOB1 to the RDC (20,000) is not sufficient to fill a truck.
- **Infeasible Coverage** - This occurs when based on the winning load types for each lane a situation exists in which not all DC's can be serviced regardless of which FOB wins the RDC. This scenario is due to a rule that only one FOB can service an RDC for a particular product. For example, consider the following example in which two FOB's each bid on separate Prosource DC's.

Table 30

FOB	LOAD TYPE	DC 1	DC 2	DC 3	DC 4
FOB 1	RDC	Yes	Yes		
FOB 2	RDC			Yes	Yes

Note that the above is not feasible. There is no FOB that can service all of the DC's via the Prosource RDC.

Table 31

FOB	LOAD TYPE	DC 1	DC 2	DC 3	DC 4
FOB 1	RDC	Yes	Yes		
FOB 2	RDC			Yes	Yes
FOB 3	LTL	Yes	Yes		

In this example, however, it is feasible for FOB 2 to win the RDC, with DC 1 and DC 2 being serviced by FOB 3.

As with the Least Cost Analysis, OPR is calculated on a per Unit basis. As a last step, OPR populates a case freight table which is used to create Cost Matrices once an analysis is complete. All of this information is kept in the system for enhanced analysis by the Logistics department.

Figure **210** illustrates a Report Selection window **21000**. Several of the reports that can be selected are set forth below.

- Freight Information Provided: At a Market Basket Level, contains Lane Freight Status, 2-week totals (Cases, Weight, Cube) and Freight Provided information for each lane.

- LTL Routing Grid By Lane: Displays all LTL information provided with shading to identify missing rates.

- Routing Results by Lane: At a Market Basket Level, contains Truckload and Unit Shipment amounts for each of the Load Types provided (TL, LTL, RDC), along with an indication of the Load Types chosen as the Optimal Product Routing winner.

- Routing Results by Lane, Item: At an actual Item level, contains Truckload and Unit Shipment amounts for the Load Types chosen for its lowest cost. This Shipment information is used to create Cost Matrices.

- Routing Results w/ RDC Breakout by Lane: A breakout of the RDC information provided in the *Routing Results by Lane*, detailing the Inbound, Markup, and Outbound freight amounts.

- Routing Results w/ RDC Breakout by Lane, Item: A breakout of the RDC information provided in the *Routing Results by Lane, Item*, detailing the Inbound, Markup, and Outbound freight amounts.

- TL Freight Variance Analysis: Compares Truckload Freight rates against Freight Per Mile benchmarks.

- TL Freight Variance Analysis, by Case: Compares Truckload Freight rates against predetermined Freight Per Mile benchmarks at a Case Freight level.

Figure **211** is a flowchart of a process **21100** for product routing in a supply chain management framework in accordance with an embodiment of the present invention. A plurality of lanes of a supply chain are identified in operation **21102**. Next, a lowest cost routing scheme is determined for each of the lanes in operation **21104**. A supply chain analysis is then performed using the lowest cost routing scheme in operation **21106**.

In one aspect of the present invention, the lowest cost routing scheme may be selected from a group of schemes that includes less-than-truckload carriers (LTL), regional distribution centers (RDC), and full truckloads (FL). In another aspect, the lowest cost routing scheme may be determined automatically prior to performing the supply chain analysis. In a further aspect, a report reflecting the supply chain analysis may also be outputted. In an additional aspect, the lanes may be identified utilizing a network. In yet another aspect, results of the supply chain analysis may be outputted utilizing a browser-based interface.

Solving and Reviewing the Solution

Once all the required information has been entered, the problem can be solved from any of the tabs by selecting the Solve button **21200**, shown in Figure **212**. The processing

time will vary depending on the complexity of the problem and the quantity of the data that is being passed to the solver.

It will pass through the following phases:

- Solver Validation: Incomplete analysis data can be saved, but it is not valid to pass that information to the solver. For example, an analysis can be saved without filling in all the pricing, the solver cannot run until it is complete.
- Feasibility Check: A preliminary check is run to ensure that the problem definition attempted to be solved is feasible. Infeasible scenarios would include, say, a lane requirement with no relevant freight quote, or Supplier minimums greater then the sum of the Supplier's FOB maximums. A list of exemplary checks are as follows.
    - Sum of FOB max < Supplier min
    - Sum of FOB min > Supplier max
    - DC has Usage but no Freight (e.g. no Freight quote or all Lanes Excluded)
    - Total Usage > Total Supplier max
    - Total Usage > Total FOB max
    - Required Lanes, No Freight
    - Required Lanes, insufficient Supplier capacity
    - Required Lanes, insufficient FOB capacity
    - Valid Lanes, insufficient Usage for Supplier min capacity
    - Valid Lanes, insufficient Usage for FOB min capacity
    - DC Usage > Any FOB max
    - Lane without facility

- Optimal Product Routing: First, a determination is made as to whether there is a need to run OPR or not, and if there is the process will run.
- Weighted Delivered: The weighted average delivered cost for the basket of products for each lane is calculated. If applicable the optimal freight is included from the OPR process.

- Check Solver Availability: Whether licensing allows one or more concurrent users
- Run the Solver: Invoke the solver engine
- Insert Results: Grab the results from the solver and update the Supply System.

Figure **213** illustrates the Report Selection window **21300** which allows selection of the report type. The Report Type menu d7402 lists associated reports.

The report generator for the least cost system operates in the same manner as the report generator in the 'Utilities' menu of the Supply System.

The Least Cost system has several reports available to analyze and view the solution generated by the solver. These reports fall under the following categories.

- Awarded Volume: Awarded Volume reports are used to show each FOB/DC combination and it's awarded volumes. These reports can be used for specific items or the market basket. Figure **214** illustrates a Report Name drop down list **21400** of related reports.
    - Awarded Volume by Item – Detail Solver solution with a breakout of each lane awarded, the Invoice FOB (and relevant contract FOB), freight and estimated sales.
    - Awarded Volume by Item – Freight Solver solution with a breakout of the freight costs on each lane, as well as the period and annualized freight totals.
    - Awarded Volume by Item – Summary Solver solution with Supplier and FOB summary totals only.
    - Competing DC Freight Analysis by Item A freight analysis between a series of pre-defined "competitive" DCs based on the latest finalized Cost Matrix and the selected version.

- Lane Assignment Matrix A lane assignment grid to quickly review the solver solution, FOB capacity constraints and the Contract FOB used.
- Lane Weighted Average Delivered Cost A complete lane grid detailing the delivered costs on each lane. For FOBs with volume pricing, the delivered costs are based on the awarded volume to each FOB point.

- Comparison Reports: The comparison reports enable a user to compare different versions of an analysis against each other or against the latest finalized cost matrix by item. Figure **215** illustrates a Report Name drop down list **21500** listing related reports.
  - Assigned Volume Percentages A FOB comparison of awards and award percentages of overall volume.
  - Invoice FOB Detail Comparison A DC comparison of invoice price, freight, delivered costs and routing. It also shows weighted average and summary totals.
  - Invoice FOB Savings Comparison An overall comparison of invoice price, weighted average freight and delivered costs and summary totals. When compared with a Cost Matrix it will calculate the savings estimate between the matrix and the versions selected.

- Cost Matrix Preview: The cost matrix preview report enables the user to preview the cost matrix that would be created from the selected analysis version, before it is actually created in the Supply System. Running this report will show the user all of the DC/FOB combinations and the costs associated with them. The user can also preview the cost matrices from the "Cost" toolbar option.
- Optimal Product Routing: OPR reports are used to view the results of the OPR processing. Here the user can check information entered and also the information that OPR has generated. Reports include an OPR by item and OPR by lane report. For a full explanation of the OPR reports, see the earlier section entitled Optimal Product Routing.

- Tab Reports: The tab reports will generate reports designed for specific tabs. Here the user can also generate a report for each tab within the least cost analysis. Use this option to view a report of all information for an analysis.

Note that data on individual tabs can be printed using the print option on the toolbar for that specific tab.

The present invention also allows a user to retrieve Comparison Reports. The example below will retrieve the 'Invoice FOB Comparison Report (no conversion)'. Note that the term "conversion" refers to whether the report should show the price information in the analysis units (ex: pounds, pours) or convert the price information to cases. If the analysis was performed in cases, then with and without conversion will be the same.

First, the 'Comparison Reports' report type is selected from the Report Type drop down list. After selecting the Comparison Reports report type the Report Name should appear as shown in the Report Selection window **21000** of Figure **216**. Next, the report is selected from the Report name drop down. In this example, 'Invoice FOB Detail Comparison (no conversion)' is selected from the report name drop down list **21700**. See Figure **217**.

Upon selection of the report name, the appropriate parameter entry fields **21800**, shown in Figure **218**, are enabled in the lower portion of the screen. As shown in Figure **218**, this report allows selection of an item, multiple versions of the current analysis (using CTRL+Click), and whether to include the latest finalized cost matrix for the current item in the comparison.

In the example above, for HASH BROWNS, the solution for two versions and the latest finalized cost matrix will be compared.

After the correct parameters have been chosen, the report can be prepared for output to the user. Clicking on the 'Retrieve' button **21900** on the toolbar will retrieve this report

and open a window so the user can view or print the data. A Retrieve button is shown in Figure **219**.

The process is the same for any report a user wishes to view. The only difference is the parameters that can be selected.

Figure **220** is a flowchart of a process **22000** for comparison reporting in a supply chain management framework in accordance with an embodiment of the present invention. A plurality of supply chain analyses are selected in operation **22002**. Results of the selected supply chain analyses are located in operation **22004**. The results of the supply chain analyses are then compared in operation **22006** and a report on the comparison is generated in operation **22008**.

In one aspect, each of the supply chain analyses may include a separate version of a single supply chain analysis. In another aspect, the results may include cost information. In a further aspect, the supply chain analyses may be selected utilizing a network. In such an aspect, the supply chain analyses may be selected utilizing TCP/IP protocol.

Creating the Cost Matrices

Since the solver input, routing and solutions are already stored in the system, to generate cost matrices, the user simply has to identify the version from which he or she wishes to create the matrices and select the Cost button **22100** on the toolbar. Figure **221** illustrates a Cost button.

Figure **222** is a depiction of a Cost Matrix Creation window **22200** displayed upon selection of the Cost button. The present invention provides two options at this point: the matrices can be created, or a preview of them can be generated and output before creation.

- Preview button: allows the user to preview the exact information that will be inserted if a decision is made to create the matrices.
- Create Cost button: creates all Cost matrices based on the solution for the current version.

If the system detects any matrices in the system which cause a conflict, a list of those matrices is output. Preferably, the user can only overwrite an existing matrix if the dates are the same as in the analysis and the existing matrix has not been finalized. The matrix that is created by the least cost system can be edited as normal and is created un-finalized.

The present invention automatically generates both inbound and outbound RDC lanes to ProSource and Chicago Consolidated when the user inputs a command to create or preview the cost matrices.

In a preferred embodiment, the solver is designed to restrict each RDC to have only one FOB point. Hence the cost matrix will generate one inbound lane to either RDC and automatically populate the outbound lanes with the relevant Contract and Invoice FOB based on the landed cost to the RDC plus markup and the relevant outbound freight.

If volume pricing is used, the sum of the awards across all RDC lanes that the solver selects can be used to determine the relevant price.

Usage Estimator

The Bid Proposal and Least Cost systems both have a Usage Estimator module which provides a sophisticated mechanism for projecting product case usage by DC for a particular period. The Usage Estimator takes into account for each DC the following:

- Projected Average Restaurant Count
- Previous Usage (Average Units sold per Restaurant)

- Product Growth
- Coverage Factor

The Usage Estimator is made up of two pieces, DC/Restaurant Information (DC/Rest) and Usage information (Usage). In order to determine the projected product case usage, the system must first calculate the Projected Average Restaurant Count, so the DC/Restaurant portion of the Usage Estimator will be discussed first.

Regarding the DC/Restaurant Information, a Current Restaurant Count is provided monthly by the DC's in the form of Distributor Reported Landed Cost. This information, verified by Finance for Patronage Dividend purposes, provides an accurate monthly snapshot of Restaurant counts by DC. The Usage Estimator uses the most current month of information available for each DC.

Also provided with the DC/Restaurant Information is a Restaurant Growth Percent (Average) report which specifies the overall average increase/decrease in restaurant coverage that each DC will experience for the length of the Contract Period in question. Consider the following example: A DC currently services 100 Restaurants. At the end of the 1-year pricing, the DC will be servicing 110 Restaurants. The *Projected Average Restaurant Count* would be (110-100) / 2 = 105. The *Restaurant Growth Percent* in this case is (105-100) / 100, or 5%.

The Usage Information provided includes Previous Case Usage. This includes the actual number of cases sold by this DC during the previous period. Each month, the Supply Chain Coordinator receives Product Sales statistics from each of the DC's. This information contains case sales of each Distributor's Item, along with the number of Restaurants that product was sold to during the month. The Previous Case Usage number itself is not used directly to calculate Projected Usage, as it would not allow manipulation of DC Served information. This information is available under Sales/Inv - Distributor Sales from within the Supply System.

Previous Period usage information is determined by the latest information available from the DC's. For example, assume that on December 1, a Bid for a Contract Period from January to June will be completed. At this point, the system would have probably only received complete DC information through October. Since the Contract Period is 6 months, the *Previous Case Usage* would report usage for the latest 6-month period of DC Sales information (May thru October). This is considered the *Previous Period.*

The Average Units sold per Restaurant Month includes the average number of cases per month of product sold by a DC to the Restaurants it services, for those restaurants that receive product during the month. Remember, not all Restaurants will receive each product during each month. This figure, unlike the *Previous Period* information, is based on the latest complete 12-month rolling average of DC Sales information.

A Projected Average Restaurant Count is calculated by multiplying the *Current Restaurant Count* by the *Average Restaurant Growth Percent.* This number is manipulated on the DC/Rest tab.

A Product Growth Percent can also be calculated. The Usage Estimator allows the user to effect Projected Usage via a *Product Growth Percent.* For example, BKC may estimate a 5% jump in sales for a particular product during the length of the Contract Period due to national promotions, product mix changes, etc.

The Usage Estimator takes into account the fact that a particular Item is not necessarily sold to all Restaurants that a DC services. Some items are purchaser's options, others such as sausage patties, come in different sizes. Even an Item such as the Whopper will not be sold to 100% of a DC's Restaurants each month due to mid-month store openings and closings. Coverage Factor is calculated by dividing the number of Restaurants a Product was sold to by Restaurant Count during that Period. For example, if a DC Services 100 Restaurants during a month and sold SAUSAGE 1.5 PATTIES to 50 of them, this Item would have a Coverage Factor of 50/100 or 50%. Because of the

difficulty of collecting each Invoice a Restaurant receives, the DC's provide a monthly report of the number of cases sold and the number of Restaurants the product was sold to.

To illustrate, consider the following:

Table 32

Restaurants Served			Product Sales Per Restaurant					Coverage
A	B	C	D	E	F	G	H	I
Current Rest Count	Rest Growth (Average)	Proj. Avg Rest Count (A * B)	Avg Units Per Month	Product Growth	Proj Avg Units/Month	Number of Months	Proj. Units Per Rest (F * G)	Coverage Factor
100	10%	**110**	150	10%	**165**	12	**1,980**	**95%**

Projected Usage (C * H * I)
206,910

Remember, Projected Usage is comprised of the following:

- Projected Average Restaurant Count
- Projected Average Units

  (Previous Usage [Average Units sold per Restaurant] * Product Growth)
- Coverage Factor

Realize that zero growth will still give a higher Projected Usage. It's important to remember that the Previous usage is based on a changing Restaurant base. For example, assume that a DC last year started with 100 Restaurants and ended up with 110, and that the Average Units Per Month was 10. This DC would have sold an average of 1050 units per month (the Average Restaurant Count is 105). Notice that even if no Restaurant or

Sales growth occurs the next year, the Projected Usage will be higher than 1050, because of the fact that there are 110 Restaurants at the start (110 * 10 = 1100).

The process of estimating usage is user-friendly, providing DC level information, with user-input adjustments for Restaurant and Product Growth.

Landed Cost / Restaurant Count information includes:

- Case Sales by Distributor / DC
- Landed Cost by Distributor / DC
- Restaurant Counts by Distributor / DC
- Product Counts by Distributor / DC
- Average Landed Cost Per Case
- Average Cases Per Restaurant
- Average Landed Cost Per Restaurant
- Sales reported for Items not in the Product File
- Inventory reported for Items not in the Product File
- Percentage Growth by DC - Product Sales
- Percentage Growth by DC - Landed Cost
- Percentage Growth by DC - Restaurant Base
- Percentage Growth - Product Count
- Percentage Growth by DC - Product Count

Each Distributor references a system Item by it's own Distributor Item and Distributor Item Description. For example, a Whopper can be referred to as "BEEF-WHOPPER 4.0 OZ", while another company calls it "WHOPPER", and a third company calls it "WHOPPER CS/144EA". Cross-referencing, or matching system items with each of the Distributors', is what allows a user to view inventory or sales for the Whopper without knowing the Distributor's naming conventions.

In some cases, a Distributor may have more than one Item (SKU) for a particular system Item. A slight packaging change may cause the Distributor to create 2 SKU's for what could otherwise be considered one system Item.

For example, a DC that services 100 Restaurants changes SKU's mid-month and reports selling 1000 cases of the first SKU to half of its Restaurants, and 1000 cases of the second SKU to the other half. *Average Units sold per Restaurant Month* in this case, would be the number of Items sold (2000) divided by the *Restaurant Count* (100), or 20.

A Distributor may not always change an SKU. They may consider CUP-PROMO a catch all even though there is a separate Item for each CUP promotion.

Each time the Usage Estimator is used, the following should be verified:

- Appropriate DC's are accounted for in Previous Case Usage
- DC Items appear to be properly Cross-Referenced
- Reasonableness of DC Sales Monthly Detail information for this Item (Sales/Inv - Direct to Restaurant)
- Previous Case Usage and Average Units sold per Restaurant are reasonable and consistent
- DC Sales information coincides with Supplier Sales for the Item (taking timing and DC inventory into account).

Beef Formula Pricing System Example

The Formula Pricing System of the present invention allows quick and easy calculation of the weekly meat block cost for all suppliers.

A new Formula Pricing can be created in either of two ways. The first one is to build a Formula Pricing from scratch. The second method uses the "New Using Previous" feature, which will create an entire copy of a previous Formula Pricing and allow a user to make the necessary modifications.

Figure **223** illustrates the Formula Pricing submenu **22300** of the Supply drop down menu. To create a new Formula Pricing, select Edit / View to open an existing Formula Pricing or create a new one. After selecting the Edit / View menu option, the standard query screen is displayed. Select New.

To use the New Using Previous feature, select New (Using Previous) from the Formula Pricing submenu to copy an existing Formula Pricing into a new one. A complete copy of a previous Formula Pricing can be made by selecting this option.

Figure **224** illustrates a Formula Pricing window **22400**. As shown in Figure **224**, the Formula Pricing window is made up of several different tabs. The labels identify these tabs across the top of the window. Examples of these tabs are 'Pricing', 'Formulas' and 'Block Cost'.

The first tab visible on the Formula Pricing window when it is opened is the 'General Info' tab, which shows pricing description, item, date ranges and Adjustment amount. This tab is where general information for this Formula Pricing is entered. The fields of the General Info page include:

- Pricing ID: Unique identifier for this Pricing. Generated by the Supply System. Non editable.
- Description: Unique name for this Pricing. It should representative of the type of Formula Pricing being completed, and will be the primary method of identifying and retrieving the Pricing later.
- Item: Item whose Price is being calculated. After the Pricing information is saved this field is grayed out, becoming non-editable.
- Raw Material Pricing Date: The Coordinator/Supply System calculates this date but it may be changed. The system will pick up the last Monday used for the chosen item and calculate the next Monday. After entering this date or accepting the system generated one, the Formula Pricing date range is calculated as follows: The To Date is

calculated subtracting 3 days from Raw Material Pricing Date (Monday) which will give a Friday. Then 11 days are subtracted from this date to calculate the From date (Friday). This date calculation may be changed by the IS Development staff.

- Cost Matrix Begin Date (and End Date): Cost Matrix Date period associated to this item Formula Pricing.
- FOB Adjustment Amount: Upcharge or downcharge applied to formula calculation.

Figure **225** depicts the page **22500** displayed upon selecting the Pricing Tab. After entering all of the information on 'General Info' tab, the user will be now be able to move to the next tab 'Pricing'. This tab is used to enter the prices of the raw materials for the Formula Pricing period.

The Date column includes the period dates excluding weekends. These dates can be modified. If the date exist in a previous pricing, the message window **22600** shown in Figure **226** will pop up. If the user answers yes, the prices for that date will be inserted into the current Formula Pricing.

If there are more than one pricing with the same date, the message window **22700** shown in Figure **227** will appear. If the user answers yes, a selection window **22800**, depicted in Figure **228**, will appear to allow selection of the pricing data that the user wants to copy over the current pricing.

Some of the raw materials price is calculated based on other materials. The following is an illustrative list of these materials with their formulas.

Fresh Domestic 73% Trim:

(Fresh Domestic 75% Trim / 75) x 73

Fresh Domestic 80% Lean:

(Fresh Domestic 85% Trim / 85) x 80

Fresh Domestic 90% Lean:

(Fresh Domestic 90% Lean Blue + Fresh Domestic 90% Lean Yellow) / 2

Lean Finely Textured Beef:

(Fresh Domestic 90% Lean x 0.80 (or 0.82))

Figure **229** is an illustration of the page **22900** displayed upon selection of the Freight Tab. The Freight tab shows the freight amount that will be added to raw material per Supplier FOB. Preferably, the Freight tab is display only.

Figure **230** is a depiction of the page **23000** displayed upon selection of the Formulas Tab. This tab is also display only and it will show the different formula values for each supplier. The columns of the Formulas Tab page include:

- **Formula:** Generic name of the formula, which include an acronym for the supplier's name and a number.
- **Pct.:** Percentage of raw material used in the formula.
- **Cost:** Cost of raw material based on percentage (Price + Freight).
- **Total:** Sum of all the costs in formula.

Formula Descriptions:

The following Table describes illustrative formulas. The freight amount, if any, is added to each raw material average market quote.

Table 33

Company A Food Service:

Raw Material	Percentage
Fresh Domestic 50% Trim	31.200%
Fresh Domestic 90% Lean	18.800%
Imported Australian 90% Lean	40.000%

Lean Finely Textured Beef 10.000%

Figure **231** illustrates the page **23100** displayed upon selection of the Block Cost Tab. The Block Cost tab creates the FOB price based on the previous tab calculations and the yield and margin. The columns displayed include:

- **Formula:** Formula short name (supplier).
- **Raw Material Cost:** Total amount from previous tab.
- **Yield:** Processing yield (inverse shrinkage). For example on AFS-1 there is a 0.01 loss of material.
- **Block Cost:** Calculated field. Raw Material Cost / Yield.
- **Margin:** Supplier's markup.
- **FOB Price:** Sum of Block Cost and Margin.
- **Include?**: Specifies if the formula price will be used.

Figure **232** is a depiction of the page **23200** displayed upon selection of the Adjustments Tab. The final FOB Price may be modified using the Adjustments tab. The toolbar icons **23300, 23302** shown in Figure **233** are used to insert or delete adjustments.

After the Formula Pricing is completed the user can print the Raw Material Letter which describes the prices of the raw materials for the different suppliers of the current Formula Pricing. To retrieve the Raw Material Letter, the RM Letter icon **23400** is selected. See Figure **234**.

Figure **235** illustrates the Formula Maintenance window **23500** that is used to modify or add new formulas. To open the Formula Maintenance window, the Formula Maintenance menu item **23600** is selected from the Formula Pricing submenu, as shown in Figure **236**.

The top portion of this window shows the formula's main information, including:

- **Formula ID:** Unique identifier for each formula. Generated by the Supply System. Non editable.
- **Facility:** FOB for each formula.
- **Description:** Formula's unique name.
- **Short Name:** Unique code for each formula. Used as a label in Formula Pricing main window.
- The bottom portion of the window displays detailed information of the selected formula from the top.
- **Material Type:** Raw materials used in the selected formula.
- **Begin Date:** Starting date of formula percentage.
- **Percentage:** Amount of raw material used to create a finished item. The sum of the percentage must total 100.

In Summary

The new technological infrastructure and its associated electronic reporting and feedback systems equips retailer management with accurate, timely, and previously unavailable information from the Supply Chain on sales, marketing and other performance indicators allow Supply Chain management to fully engage in managing supply and distribution processes and channels toward identified and agreed strategic objectives provide franchisees and retailers with the Supply Chain information they need to operate efficiently and make effective management decisions minimally impacts the resources of Supply Chain management

With Supply Chain management assuming full responsibility for managing the fundamentals of the Supply Chain system, Supply Chain participants are strategically positioned to focus on the six business priorities that have been identified: operational excellence, boosting sales growth, focusing resources, discovering the essence of the Brand, image transformation and revitalizing franchisee relations.

While various embodiments have been described above, it should be understood that they have been presented by way of example only, and not limitation. Thus, the breadth and scope of a preferred embodiment should not be limited by any of the above described exemplary embodiments, but should be defined only in accordance with the following claims and their equivalents.